Industrial FINISHING

PAINT COMPANY

THE SHIELD OF QUALITY

RESEARCH is at its best when experience and theory work together. That's what you get in ADVANCE finishes and ADVANCE service—more than half a century of experience, coupled with the ability and knowledge of highly trained technicians.

For the Better Finish
. . . Better Buy Advance

Advance PAINT COMPANY

MANUFACTURERS OF INDUSTRIAL FINISHES

TO GIVE YOUR PRODUCT A GOOD START, GIVE IT AN INTERCHEMICAL FINISH!

Undercoats . . . Varnishes . . . Lacquers . . .
Enamels for Metal . . . Plastic . . . Wood

AULT & WIBORG, MURPHY, ROXALIN, AND IC ARE TRADEMARKS OF INTERCHEMICAL CORPORATION

Enthone products for better Pickling of steel –

ACID ADDITION AGENT

Stops fuming of acids — promotes better wetting — lowers drag-out — saves acid — less harm to operator — less corrosion on surrounding equipment — more uniform pickling effective with sulphuric acid hot and cold — hydrochloric — phosphoric — hydrofluoric acids.

COMPOUND 42

A new cleaning and pickling agent combined—removes oil and rust at room temperature in One operation — prepares metals for painting — inhibits rusting — apply by dipping or brushing.

INHIBITOR 8

A new complete inhibitor to stop attack on base steel — high inhibition in sulphuric—hydrochloric—phosphoric acids —lowers surface tension—less drag-out —saves acid—reduces rusting after pickling — reduces fuming — bright pickling — makes pickling a more pleasant and healthful operation.

COMPOUND NR-37

Prevents rusting during drying but *leaves* no residue — added to hot or cold water it permits drying without rusting and leaves steel clean for painting — very effective for porous castings.

ENTHONE INCORPORATED

Write for Check List
Sixty Products and Processes
for Metal Finishing

442 ELM STREET • NEW HAVEN, CONNECTICUT

Laboratory MILLROOM

MINIATURE PRODUCTION PLANT

More than a thousand "tailormade" finishes are developed each year for the factories we serve . . . finishes that exactly meet *production*, as well as *design* requirements because of our laboratory factory in miniature. Ingredients are weighed, measured, mixed, ground, tinted, and filtered — pass all production steps — with small amount of material, and small machines that duplicate the large production units, like the Baker-Perkins mixer shown here. This eliminates mistakes. Increases efficiency and economy.

The Better the Finish,
the better the Buy

GRAND RAPIDS VARNISH CORPORATION

GRAND RAPIDS, MICHIGAN

Makers of the Famous Guardsman Finish and Guardsman Cleaning Polish

OCTOBER, 1951
Vol. XXVII, No. 12

CCA

a monthly magazine for finishing room and paint shop foremen, production superintendents, chemists, purchasing agents and company executives of industrial plants where production cleaning and finishing are major operations in the manufacture of parts and products.

Industrial FINISHING

W. H. ROHR, Editor P. C. BARDIN, Associate Editor

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Remove { PAINTS AND HIGH BAKED ENAMELS

FASTER

and Cleaner TOO!

KLEM Strip-Aid

Patent applied for

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14401 LANSON . . DEARBORN, MICHIGAN

Please send experimental sample of Klem STRIP-AID.

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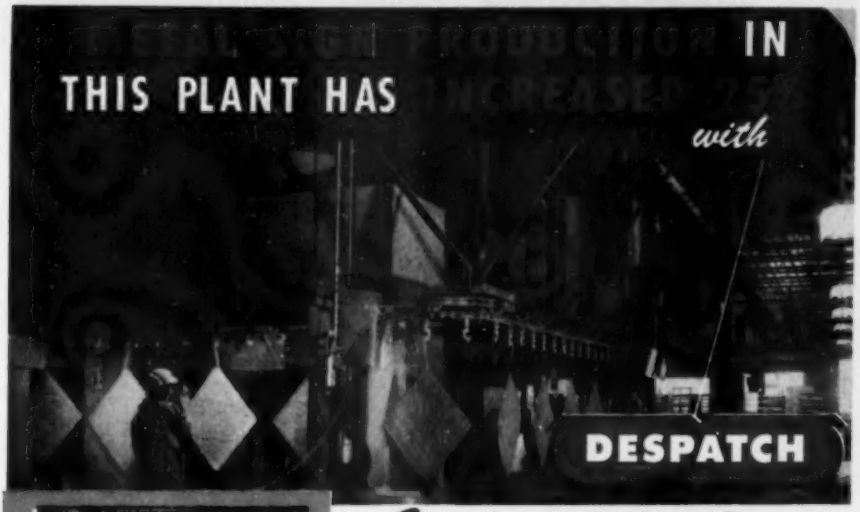
City_____

A remarkable new additive that speeds the action of your paint stripper.

KLEM Strip-Aid gives you more complete and cleaner stripping — Salvages paint rejects that have previously been too costly to handle or impossible to strip. Cuts stripping time in half.

Especially effective for removing accumulated paint from handling equipment.



Natural heat seals are achieved by oven's bottom entrance and exit.

NO MATTER WHAT THE PRODUCT—

DESPATCH Finishing Systems are designed to finish it better and faster.

They are engineered to fit your particular needs. You can get a complete system or individual units, such as—

- BAKING OVENS • DRYOFF OVENS
- SPRAY BOOTHS • FLOW COATERS
- WASHERS • AIRMAKEUP SYSTEMS
- CONVEYORS

Conveyorized—

FINISHING SYSTEM

Producing heavy metal street and highway signs at Lyle Sign Company, Minneapolis, is big business. Durability plus long-lasting legibility are among the top requirements.

To further improve quality and step up production, Lyle Signs recently installed this modern DESPATCH Finishing System with 350 ft. continuous, monorail conveyor and overhead oven.

100 24" x 24" SIGNS PER HOUR

This system is now producing 100 24" x 24" signs per hour, per coat of paint. The oven is a 4-pass, direct gas fired. Its overhead construction allows for bottom entry and exit of the conveyor line, which provides natural heat seals. Much of the floor area under the oven is used for loading and unloading the conveyor and sign racks, thus saving floor space. The route of the conveyor under the oven serves as a cooling area.

Signs are spray painted in a DESPATCH water wash spray booth. From two to three coats of enamel are applied, each being subjected to a 30-minute baking at 300° F.

DESPATCH OVEN COMPANY

Minneapolis Offices
619 S. E. 8th Street

Chicago Offices
7070 No. Clark Street

WRITE TODAY for Bulletin 51C or request a representative to call.

Last Chance. October's Indian Summer provides the last chance to complete all of the outside repairs, painting and cleaning up around the plant. Better take advantage of it. Fall rains turn into snow sometimes.

* * *

A New Preservative has been developed for the treatment of textiles and other materials subject to attack by micro-organisms. It is called Copper 3-Phenylsalicylate . . . doesn't have any injurious effect on materials treated. At present it is available only in pilot plant quantities; however expanded production facilities will soon be in operation.—*Dow Chem. Co.*

* * *

A New Resin for paint, known as Cycopal S-203-5 is announced. It contains no castor oil. This resin was developed to meet military requirements for a fast drying, durable finish for shells. It is also suitable for use in a variety of air drying and baking enamels.—*American Cyanamid Co.*

* * *

Automatic control instruments that "practically think" are doing a big job in controlling factory processing operations, freeing technical manpower for more creative assignments, it was demonstrated at the Sixth National Instrument Exhibit at the Sam Houston Coliseum, Houston, Texas. Complex plant operations that can run automatically or which require operating accuracies beyond human abilities are no longer impossible or impracticable.

Controllability by instruments permit more latitude in the design of process equipment. This will lead eventually to economies in the building of this manufacturing equipment, and raise the quality and lower the cost of the product of the equipment.

* * *

Factory Floor Repair. Floors may now be repaired or resurfaced with a material known as Immediate-Set. This material consists of asphalt-rock, limestone and cold asphalt emulsion to which pulverized natural rubber has been added to reduce brittleness in sub-freezing temperatures, to provide greater traction when wet, and to reduce the tendency to rut or wave under extremely heavy point loads. It is said to stand up well under steel-wheel traffic.—*Flash-Stone, Inc.*

* * *

Tin Substitute. A container that resembles an ordinary "tin" can but is made from 3-ply aluminum foil and impregnated with plastics, has been developed by Reynolds Metals Co. It is made by coating aluminum sheets with plastics and bonding them under heat and pressure.

Production of the new material is starting immediately but the present output will go to fill requirements of the armed forces. [*Cont'd page 8*]

OUTSTANDING DOLAN PRODUCTS

NO. 1900 RUBBING OIL and CLEAN-UP POLISH

Eliminates haze or blush and produces a clear, clean, dust-free finish that will not finger-mark.

FASTAINS

Newest Standard Shades of red or brown Mahogany, Maple or Cherry Light or Dark Walnut, and matches for any and every desired finish.

LIGHT-FAST—NON-GRAIN RAISING—BRILLIANT—TRANSPARENT—NON-BLEEDING STAINS

LACQUER-TYPE FILLERS

RICH, FULL COLORS, LIGHT FAST, eliminate lifting, bleeding and greying.

LACQUERS

#1350 HI-SOLIDS (35%)
#2100 HOT-R-COLD (35%)
#2150 COMPANION Sealer
WATER-WHITE Lacquer

Also regular lines of highest quality 27% and 21% Lacquers

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Saves You Money

on THINNERS

We make nothing but Thinners—blended Solvents, and nothing else. Naturally, we buy large quantities of solvents—at lowest prices. *Specialization* saves us money on overhead too—and these savings we pass on to you, our customers.

We know how to formulate Thinners to your requirements—been doing it for 26 years. We've satisfied big and little customers . . . let us show you how a Lacquer Thinner *SPECIALIST* can supply you with the *right* Thinner . . . and still save you money.

Just fill out form below and mail today. We'll work out a Thinner *especially for you*, and send a sample. Think we can do it for 85¢ or less a gallon too!

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CORTLAND, N. Y.
THINNER SPECIALISTS

The product we make is:_____
We use Lacquer Thinner for:
☐ Spray ☐ Dip ☐ Cleaning ☐ Other_____
We use Lacquer Thinner on:
☐ Metal ☐ Wood ☐ Other_____
We want it to dry:
☐ Fast ☐ Slow ☐ Medium

Name_____
Address_____
City_____ Zone____ State_____

Tin, like natural rubber, is one of the few materials vital to defense that the United States does not produce. Bolivia and Malaya are chief sources at present.

* * *

Light Metal. Metallurgists and aeronautical engineers predict that titanium, "lightweight champion of all metals," will be number one material for plane construction in the future.

* * *

Lignum-Vitae. Interested in Lignum-Vitae, the hardest, heaviest and closest-grain wood in the world? It weighs 80-lbs. per cubic foot, has a specific gravity of 1.14 and has a resin content of about 30% of its weight; is resistant to many acids and chemicals, and makes excellent noiseless self-lubricating bearings. For further information write Lignum-Vitae Products Corp., 100 Boyd Ave., Jersey City, N. J.

* * *

Improved Gasoline. Safer, more efficient operation of airplane engines and elimination of most costs and delays caused by failure of aircraft spark plugs may be made possible by a new aviation gasoline ingredient announced recently by Shell Oil Co.

The new product, developed in Shell research laboratories, is said to virtually eliminate spark plug fouling, long one of the major headaches of airplane maintenance.

* * *

A Chemical Resistant Tank made of Geon 404, a rigid vinyl plastic has been introduced. At ordinary temperatures this material is unaffected by alkalies, acids, salts, oxidizing agents, oils, greases, alcohols, gasoline and carbon tetrochloride. All nuts, bolts

(Continued on page 138)

THE NEW *ALL-PURPOSE* WAY TO *HEAT, BAKE, DRY* YOUR MILITARY OR CIVILIAN PRODUCTS

For many industrial uses at temperatures of 650° F. or less, Radiant Calrod* Ovens by Jensen are taking the place of infrared lamps, ribbon heaters, steam coils, gas and oil burners. Calrod radiation for fast heating—with convection for holding precise temperatures—means higher quality results, shorter heating cycles, with consequent space and cost savings. Electric Calrod heat is non-interruptible, fully automatic, and well-proven from years of service in electric furnaces.

Recommendations furnished to job specifications.

**Reg. U.S. Pat. Off.*

Advance

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JENSEN SPECIALTIES, INC.

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15 FIELD OFFICES TO SERVE YOU

• INSULATED • ACCESSIBLE • LONG LIFE • SAFE • NON-FRAGILE • LOW COST

COMPLE

. . . the EXPERIENCE that goes into the PLANNING and ENGINEERING of MAHON EQUIPMENT is the item of GREATEST VALUE to YOU!

The illustration at the right shows the Cleaning and Rust Proofing Machine at the left, parts emerging from the overhead Dry-Off Oven and entering the Spray Booths. Above: View of products passing through Tack Rag operation prior to entering Spray Booths, and completely finished parts and products emerging from the overhead Finish Baking Oven. The Dry-Off Oven and the Finish Baking Oven are both located above the Spray Booths.

M

SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH

REVCO, INCORPORATED Acclaims MAHON FINISHING SYSTEM as WISE INVESTMENT!

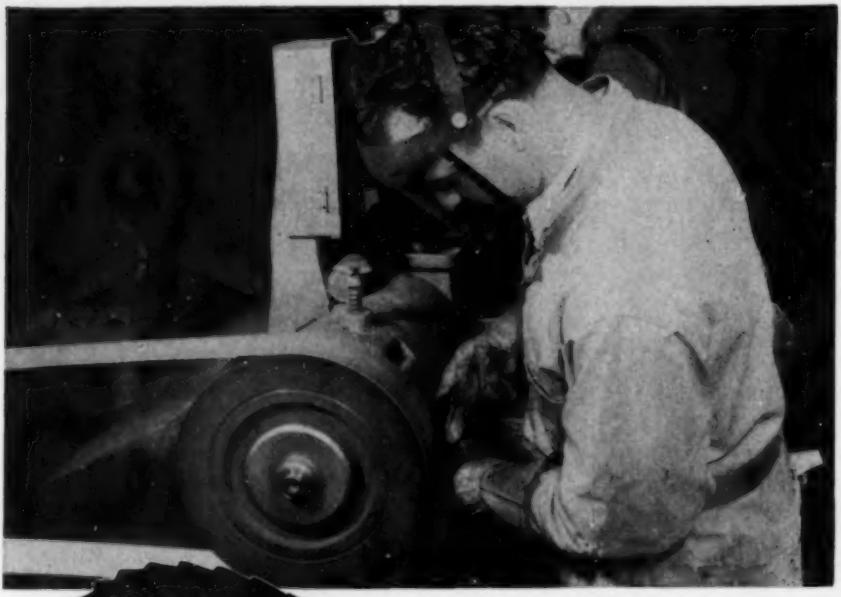
The Complete Mahon Finishing System illustrated here was specially designed to meet the production requirements of Revco, Incorporated, Deerfield, Michigan, and to fit into the space available in the company's production layout. The system consists of a five stage Metal Cleaning and Rust Proofing Machine, Dry-Off Oven, three Hydro-Filter Spray Booths with a Filtered Air Supply Unit, and a Finish Bake Oven, designed and coordinated to apply the synthetic enamel finish to Home Food Freezer Cabinets and Component Parts—all of which are carried through the entire system on one continuous monorail conveyor. Like many other enthusiastic Mahon customers, Revco management is loud in its praise not only of the production capacity of the system and the fine finish obtained, but of the manner in which the installation was planned, produced and erected. You, too, can turn your finishing equipment problems over to Mahon with complete confidence, because Mahon engineers have pioneered development in this highly specialized field for over thirty years . . . they are backed by a wealth of technical knowledge and practical know-how not available to you elsewhere. See Mahon's Insert in Sweet's Mechanical Industries File for full information, or write for new Catalog A-652.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 34, Mich. • WESTERN SALES DIVISION, Chicago 4, Ill.

Engineers and Manufacturers of Complete Finishing Systems—including Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Dry-Off Ovens, Hydro-Filter Spray Booths, Filtered Air Supply Systems, and Drying and Baking Ovens; Core Ovens, Hydro-Foam Dust Collectors, Fog-Filters, and other Units of Special Equipment.

AHON



Twice the belt life in backstand grinding!

Try one simple change in your present backstand set-up. Using the same backstand grinder, the same type of abrasive belt by CARBORUNDUM, remove the contact wheel and replace it with our new serrated rubber "61" wheel.

Put the machine back to work. See for yourself how stock removal rates go up, how much longer the belt cuts, how belt changes are reduced. Watch for a better finish, less fatigue from your operator. Best of all, check your abrasive costs. They may be as much as 50 per cent less. See your CARBORUNDUM representative or distributor about the new "61" wheel. Or write Dept. IF 82-127.

Only CARBORUNDUM
TRADE MARK

makes ALL Abrasive Products ...to give you the proper ONE

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, N. Y.

82-127

You're always
"ON THE BEAM"
with
LCA
U. S. GOVERNMENT
SPECIFICATION
FINISHES

LCA

It's always good sense to consult a specialist when you have a particularly difficult problem.

For this reason, many firms engaged in defense production, as well as those making civilian goods, have found that when LCA finishing experts take over, they have the assurance that the final result meets with satisfaction.

Therefore, before you bid on defense contracts . . . let LCA estimate on the needed SPECIFICATION FINISHES.

Write us today concerning your problem.

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Give

The United Way

for ALL Red Feather Services

THE Lilly COMPANY

FINISHES

High Point, N. C.

. .A SYMBOL OF SERVICE!

THE RED FEATHER service symbol of more than 15,000 volunteer health, recreation and welfare services, is a bigger Red Feather this fall because it includes not only Community Chests but the United Defense Fund as well.

When you give your share through your town's UNITED RED FEATHER CAMPAIGN, you contribute to your own local Red Feather services, to the USO and to the emergency health and welfare agencies that provide help to people wherever defense efforts create special problems.

It's a bigger Red Feather than ever before and it needs your help more than ever before. GIVE GENEROUSLY to your UNITED RED FEATHER CAMPAIGN. REMEMBER . . . October is RED FEATHER month.

The LILLY Key is also a SYMBOL of SERVICE

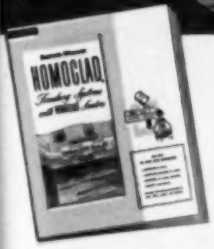
The Lilly "Key" has been serving industry for 86 years—since 1865. It has served well in supplying dependable finishes—finishes that are specifically formulated for specific products and purposes. Why not let the Lilly "Key" serve your finishing needs so that—

"WITH THE RIGHT FINISH—YOU'LL FINISH RIGHT"

THE Lilly FINISHES VARNISH COMPANY

Indianapolis, Indiana

Gardner, Mass.



Locks FINISH to FILLER

. . . cuts HOURS and DAYS off schedules!

Apply it over *wet* filler—this unique new sealer forms an interlocking bond between filler and top coats . . . creates a homogeneous finish literally "locked to the wood" . . . speeds up schedules by eliminating need for drying of filler before applying sealer!

Sherwin-Williams HOMOCLAD Sealer opens the way to new and improved finishing systems using a choice of various Sherwin-Williams top coats. Its remarkable moisture-sealing properties make possible finishes with the ultimate in adhesion.

If you produce or finish furniture or wood products of any type, you'll want full information on this outstanding key to better, faster finishing. It's contained in the new Sherwin-Williams Bulletin H-104, illustrated, which describes HOMOCLAD, its applications and some of the typical faster finishing schedules it makes possible. Ask your Sherwin-Williams representative or write for a copy without obligation. The Sherwin-Williams Co., 101 Prospect Ave., Cleveland 1, Ohio.

This brochure tells how HOMOCLAD gives new and better

- **ADHESION of finish**
- **MOISTURE-SEALING of wood**
- **CONTROL of veneer checking**
- **CLARITY and BEAUTY**

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

CIVILIAN PRODUCTION

DEFENSE ORDERS

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

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HEETCLAD
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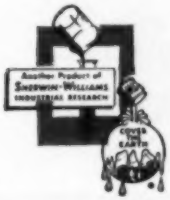


the same dependable source for

• FINISHING MATERIALS
• FINISHING KNOW-HOW

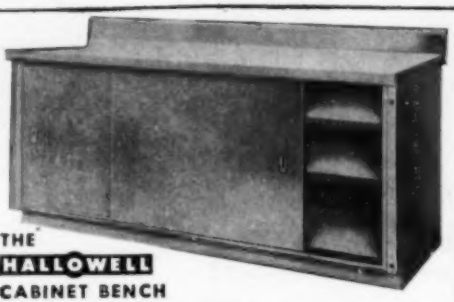
Whether you are buying finishes to meet defense specifications or your own civilian requirements, you can simplify the job . . . find dependable help on special needs . . . eliminate troublesome problems . . . through The Sherwin-Williams Industrial Division with its wealth of know-how and background, both in civilian and wartime experience.

This broad background provides the same extra advantage of experience in Sherwin-Williams finishes supplied to meet military specifications—whether for wood, metal or other surfaces—as in the S-W finishes well known for many years for civilian production, such as Kemclad, Superclad, Kemvar and TV Lacquers. This experience is available wherever you may be, through facilities extending from coast to coast. Call, wire or write The Sherwin-Williams Co., 101 Prospect Ave., N. W., Cleveland 1, Ohio.

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

YARNALL-

ORIGINATORS AND MANUFACTURERS OF THE UNUSUAL IN *Industrial Finishes*



THE HALLOWELL CABINET BENCH

The beautiful durable finish on this sturdy Hallowell Cabinet Bench is a coating developed by Yarnall in cooperation with Standard Pressed Steel Company Engineers, applied by the Flow Coat method.

Become acquainted with our complete line

DIPPING AND SPRAYING ALUMINUM • FLOCK ADHESIVE UNDERCOAT • WRINKLECAST • WOOD AND METAL PRIMERS • SPECIFICATION MILITARY FINISHES • FAST AIR DRY SYNTHETIC FINISHES • YARLITE BAKING ENAMEL • HAMMERCAST • EMBOSSING FINISHES

Also special finishes to meet your particular requirements

Ask about—
YARNALL PRODUCTION FINISHES meeting MILITARY SPECIFICATIONS

1885

1951

YARNALL PAINT COMPANY

INDUSTRIAL DIVISION

PHILADELPHIA 43, PENNSYLVANIA

Nacromer
A PEARLY PIGMENT

WHERE COST IS A FACTOR . .

Here's the perfect substitute for Pearl Essence where a brilliance almost comparable is acceptable and lower cost is an important factor.

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"World's Largest Producer of Pearl Essence"

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FINISHES and LACQUERS

for WOOD and METAL SURFACES

COAST LACQUERS cost less because we pass along to you the savings made possible by our immediate contact with the huge chemical plants of the Gulf Coast from which we obtain our superior raw materials at low cost. Write for information and prices on . . .

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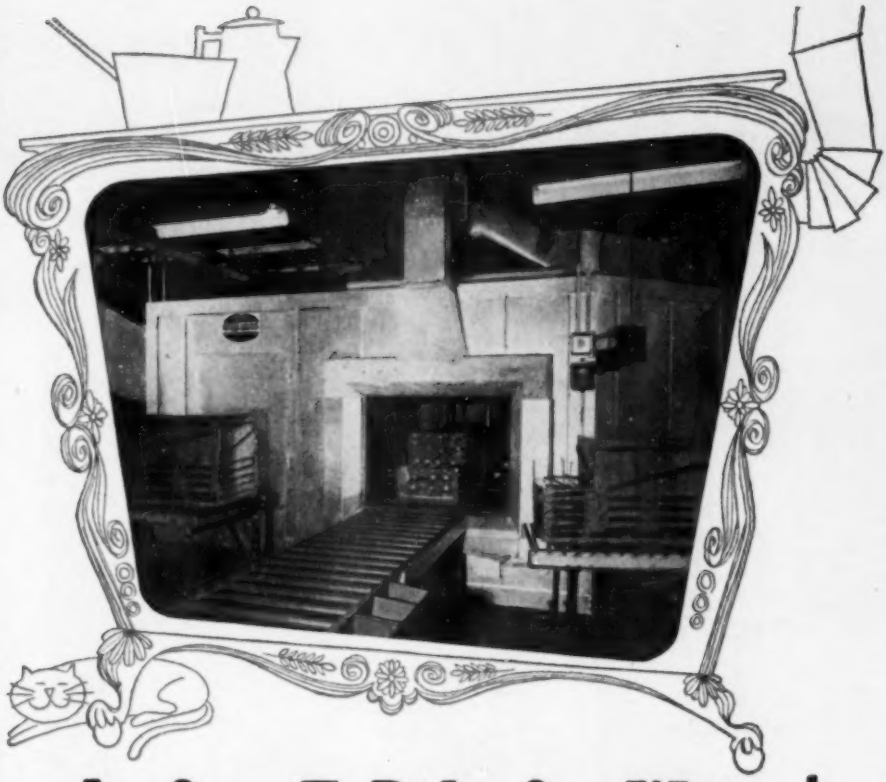


An Oven To Bake Out Water!

WATER in the coils of a refrigerating system is as harmful as water in the carburetor of a car. So Kelvinator runs a special gas-fired oven to dehydrate its refrigerating units at the Detroit plant.

The oven shown here reduces the moisture in tubing of coils and evaporators to an absolute minimum—0.03 grams per coil.

Inside the 19 foot square gas oven is a revolving table which rotates to carry the units through the dehydrating cycle. Coils of the units are connected to a compressed air source, and air at the rate of .6 cubic feet a minute circulates through the coil while it is in the oven.

Oven temperature is maintained accurately and automatically at 275°, with a plus or minus variation of only 5° The dehydrating process requires about ten minutes. 36 of the units shown here (for freezer chests, beverage coolers, etc.) are handled each hour. When the oven is processing evaporators used in domestic refrigerators the rate steps up to 180 per hour.

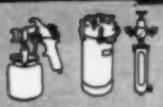
17900 RYAN ROAD
DETROIT 12,
MICHIGAN

peters-dalton
INCORPORATED

STEAM-SPRAYING

DOUBLE THICK.

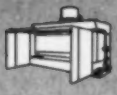
the heart of this revolutionary process is the Nordberg-American Steam Spray Gun



SPRAY GUNS AND ACCESSORIES

SPRAY PAINTING OUTFITS

AIR COMPRESSORS



AUTOMOTIVE AND INDUSTRIAL SPRAY BOOTHS

STEAM-SPRAY GUN AND SYSTEM

PUTS ON PAINT . . DOUBLE QUICK

Steam Spraying makes possible tremendous savings for industry by reducing finishing costs. Dry, superheated steam, used in place of compressed air, permits the use of higher viscosity paint because paints heated to approximately 165°F. tend to have the same viscosity. This factor alone can cut costs by reducing the amount of thinner or solvent normally required. And because the thinning is done by heat the paint returns to its original higher viscosity on contact with the surface being painted. This means that thicker coats (up to 2 mils) can be applied *in one pass of the gun!* There's your TIME and LABOR saver.

Production line tests show that these savings are available at no cost to the quality of the finish. Steam Spray IMPROVES the application of thicker coats: Dissipating steam reduces overspray usually caused by bouncing air; cooling steam contracts, eliminating popping caused by trapped air expanding under a layer of paint. At similar pressures, Steam Spray handles a higher viscosity material than does compressed air to produce a thicker coat—free of sags and runs. Specific operating advantages like the following demonstrate that this new method probably can save you considerable time and money in your finishing operation.

STEAM SPRAYING applies a greatly improved one-coat finish

STEAM SPRAYING cuts refinishing time

STEAM SPRAYING cuts labor costs

STEAM SPRAYING saves material

STEAM SPRAYING reduces the conventional volume of thinners normally necessary

STEAM SPRAYING reduces the danger of sags, runs, or popping

STEAM SPRAYING increases the operators' productivity

STEAM SPRAYING increases the productivity of existing equipment

STEAM SPRAYING costs less than air spraying

STEAM SPRAYING may be applied to any production operation without elaborate installation or high installation costs

STEAM SPRAYING reduces health hazards

STEAM SPRAYING can improve quality of finish

Brake Shoe can supply you with all the equipment necessary for steam spraying. We will be pleased to demonstrate the process in your own plant or arrange visits to conveniently located installations.

AMERICAN **Brake Shoe** COMPANY

KELLOGG DIVISION, 94 HUMBOLDT ST., ROCHESTER 3, N. Y.

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Write for FREE illustrated brochure that provides detailed information regarding the advantages of the Steam Spray Gun and System.

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● Pittsburgh Industrial Finishes are used to add to the durability and appearance of the New Holland

Pittsburgh Industrial Finishes

improve wearability and sales appeal of many fine farm implements

PITTSBURGH is helping to add to the sales appeal and wearability of many types of agricultural implements by providing high quality enamels and varnishes for these products.

● **Years ago** farm tools were painted mostly by hand with Japan colors or flat coats, followed by clear coats of varnish. This was a slow, costly process.

● **Increased production** has brought about the practice of dipping and, later, flow-coating. Some products are now sprayed.

● **Working** with leading producers of farm implements, Pittsburgh pioneered the transition from the flow coat to the enamel type by introducing bright color varnishes. Eventually, this led to a two-coat enamel system by which implements and parts could be finished in a single day.

● **With the later** perfection of alkyd synthetic enamels which can be dipped, flow-coated or sprayed, air-dried or force-dried, greater color retention as well as better protection have been achieved. All of this has been brought about by the kind of close cooperation between Pittsburgh and Farm Machinery Manufacturers which has been characteristic of Pittsburgh service in many fields.

● **Our experience** in supplying thousands of formulations for industrial needs can be helpful—often save time and money. Call on us for facts and figures.

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Industrial Paint Division, Pittsburgh, Pa.

Factories: Milwaukee, Wis.; Newark, N. J.; Springdale, Pa.; Houston, Texas; Los Angeles, Calif.; Portland, Ore. Ditzler Color Division, Detroit, Mich. The Thresher Paint & Varnish Co., Dayton, Ohio. Forbes Finishes Division, Cleveland, Ohio. M. B. Suydam Division, Pittsburgh, Pa.

PPG

PITTSBURGH *Industrial* **FINISHES**

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Hanging finished engines on conveyor which moves them from inspection to shipping.

Finish Line

BY GILBERT C. CLOSE

IN 1950, McCulloch Motors Corp., Los Angeles, Calif., was the leading user of magnesium die castings in the nation. There is no indication that this status will be lowered during the current year. Each month more than 100,000-lbs. of Dow Metal "R" magnesium die casting alloy are used in the company's huge die casting department. Every casting turned out goes into one of the McCulloch products. These products include portable engine-powered chain saws, portable engine-powered pumps, and a variety of restricted light alloy engines used to power military target airplanes.

The wide acceptance of the McCulloch products, and their popularity in the field, rests largely on their light yet rigid construction—made possible by the magnesium die castings used in their construction. But this type of construction places a special demand on the company's finishing department.

Why Magnesium Presents a Finishing Problem

Magnesium in all its forms is a notably difficult metal on which to apply a durable finish. The raw metal oxidizes quickly when exposed to the air, and these oxides, trapped under subsequent coats of paint, continue their corrosion processes, resulting eventually in a breakdown

for Magnesium Products

Special problems that come up when using protective coatings on magnesium die castings; the early pre-treatment needed to prevent oxidation of the surface. A complete cleaning, drying and painting setup in this L. A. plant.

of the applied finish coating and then rapid deterioration of the metal as it becomes exposed to air.

This tendency of the raw metal to oxidize quickly makes it necessary to provide some sort of protective coating from the time the parts are cast until they are ready for machine operations; then another protective coating immediately after machining to provide protection during assembly and until the final service coating is applied. By thus preventing the formation of seats of corrosion prior to application of the final finish, a major problem in the successful use of the magnesium alloys is effectively overcome.

Prompt Pre-Finishing Treatment Necessary

Pre-finishing protection is accomplished at McCulloch Motors by surface treating the parts twice prior to actual service finishing. The same solutions are used both times. Immediately after die casting and burring, the parts are given a modified dichromate treatment. Then, after machining and other shop operations have re-exposed some raw metal, they are treated again.

This treatment preserves and protects the magnesium parts during assembly and until they are ready for final finishing. This second in-process pre-treatment makes it unnecessary to pre-treat the parts again just prior to painting. After assembly and simple overall cleaning, the products are ready for the prime coating.

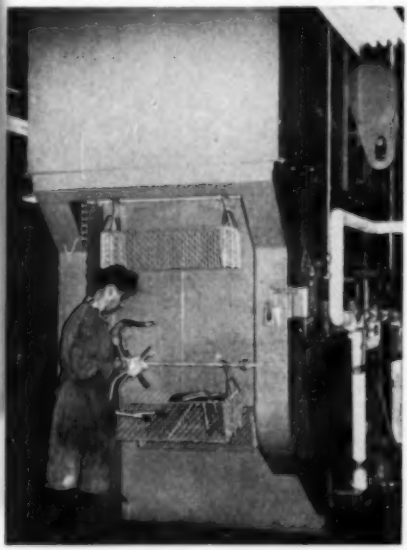
Details of Cleaning and Pre-Treatment Operations

The pre-treatment process employed includes seven distinct steps. The parts are first pre-cleaned in ——————"FS" heavy duty alkaline cleaner, mixed 8-oz. to a gallon of water and maintained at 180° F. Immersion time in this solution is

Spray cleaning an assembled engine after its first run-up and inspection. Here the cleaning solution, sprayed under pressure, removes all surface dirt, including exhaust stains and carbon deposited during run-up.

one minute to effectively remove all soils, finger marks, grease and oils. The parts are then rinsed in a clean hot-water bath operated at the same temperature.

Pre-treatment comes next. This solution is made up of 1½-lbs. of sodium dichromate, 1½ pints of nitric acid (HNO_3), 2-oz. of ammonium chloride, and water to make one gallon. The solution is maintained at 120° F., and immersion time is 15 seconds. Pre-treatment is followed by a cold water rinse; then hot water rinse in sequence. The parts are then partially dried by an air blast, and finish dried by passing them through an infra-red oven operated at 200° F. Right now the pickling room at McCullochs is undergoing renovation and modernization in line with a plant-wide expansion and improvement plan.



Plated engine handles are put in a carrying basket on the automatic vapor degreaser. All ferrous metal parts and aluminum die castings are cleaned before final assembly.

Strength of Solution Is Carefully Controlled

The solutions used in magnesium pre-treatment are rigidly controlled by laboratory analysis. Titration checks are run three times each week, with additions of chemicals made when required to keep the baths at full strength. Production controls are exercised insofar as possible to prevent excessively dirty parts from reaching the cleaning department and causing bath contamination.

In die casting, oil swabbing of the dies is limited to exact requirements to prevent excess oil from clinging to the castings when they are removed from the dies. Machine shop conditions are guarded to prevent, insofar as possible, soiling of the parts during shop operations. Most magnesium machining operations are performed without cutting oils, and this is a distinct advantage in maintaining bath cleanliness during the second pre-treatment operation.

Electric Ovens; Spray Booths; Hot Spray Systems

The recently renovated McCulloch finishing line is a model of efficiency. Conveyorized materials handling has been carried out to the nth degree. Six infra-red overhead "Cal-Rod" drying ovens are provided at various stations where needed. These ovens utilize resistance rod heating elements which run the full-length of the oven. These rod-type heating elements

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99% EFFICIENCY

would mean in your own spray finishing department

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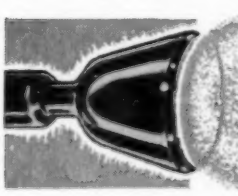
Hard to believe, isn't it? But it's a fact. The new RANSBURG No. 2 Electrostatic Process is making possible new efficiencies heretofore unheard of in the field of spray finishing. In many instances, efficiencies actually exceed 99%!

On most production lines, the RANSBURG No. 2 Process gives 25% to 75% more pieces per gallon than any other spray finishing system.

With the No. 2 Process there's NO overspray to be exhausted. NO compressed air used. NO operator skill required. And, practically all of the many uncontrolled factors in other systems have been eliminated.



Write for a copy of our brochure describing the No. 2 Process in more detail. Case histories of early installations are included in the brochure.

RANSBURG ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

have long service life, and require only a very small space for oven installation.

Paint spray booths are of the water-wash type, and are stationed at intervals along the finishing line where specific finishing operations are necessary. The new and efficient method of "hot spray" paint application is used.

Bi-Metal Contacts That Cause Electrolytic Reaction

The McCulloch products, being mostly small, light weight engines and constructed largely of magnesium, generate some peculiar finishing problems. As some aluminum die castings are used, along with various accessories of ferrous metal composition, a close guard must be maintained to prevent bi-metal contacts and the establishment of electrolytic reactions caused by varying metal potentials.

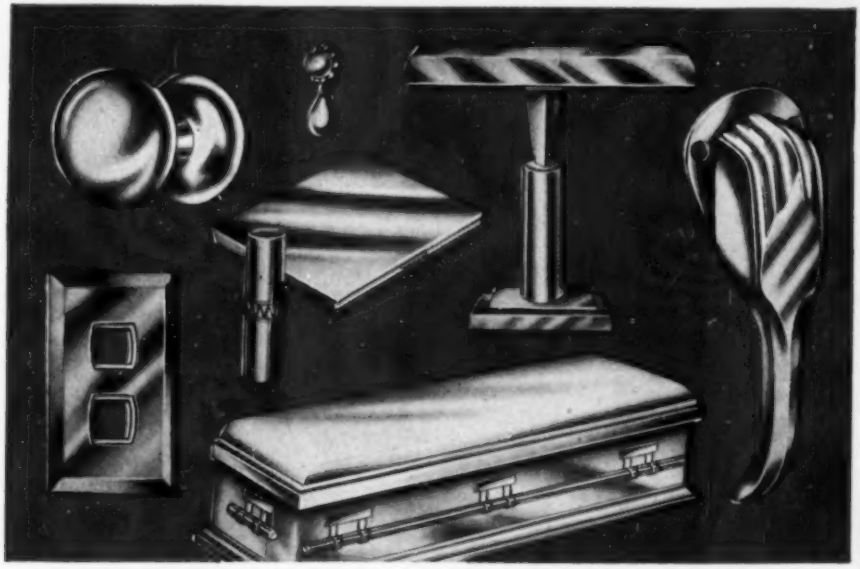
Spraying the primer coat on an engine after run-up. All ports and other engine entrances are carefully masked before priming.

In some cases, a steel stud bolt may be used to hold a magnesium and an aluminum component together. To prevent the establishment of an active electrolytic cell in such an assembly, it is necessary to plate the bolt, then use suitable non-conductive gasket material between the faying surfaces of the metal parts. Such assembly techniques to eliminate bi-metal corrosion are carefully worked out by the McCulloch laboratory before the products are placed in line production. Each point where trouble might occur is investigated, and a standard assembly procedure to prevent bi-metal corrosion is worked out.

All Parts Cleaned Again Before Final Assembly

All parts are carefully cleaned before final assembly of the engine. As already noted, the magnesium components are cleaned during the second pre-treatment cycle. All other parts are cleaned in a recently installed and fully automatic vapor degreaser employing trichlorethylene vapors.

Immediately after the engines are assembled, they are run-up and checked by the inspection department. They are then placed on the conveyor line and carried through an ordinary hand cleaning booth where they are pressure-sprayed with Paint Base Spirit No. 2. This cleaning agent effectively removes all surface dirt, including the exhaust stains and carbon deposited during the run-up check. After leaving this cleaning booth, the engines rise and pass through a 16-ft. "Cal-Rod" drying oven. After



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Don't let critical metals put a *needless* crimp in your production!

Take zinc or steel—apply a coating of one of the new PLATELUSTRE finishes. You wind up with products and parts that look so much like copper, brass and bronze that *the eye can scarcely tell the difference!*

Whether you have been using now unavailable copper and its alloys for *making* products or for *plating* products, you will find these new M & W finishes *equally* effective in keeping your plant running. There are types for air-drying and baking schedules—pick the one that best fits *your* production requirements.

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MANUFACTURERS OF INDUSTRIAL FINISHES

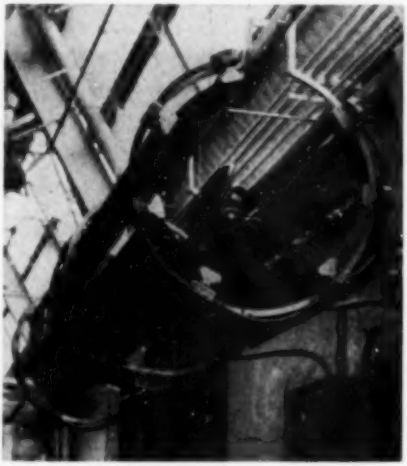
leaving the oven, the conveyor dips to working level so that the engines can be removed and placed on a bench for masking operations. All ports and openings into the engine must be masked off before painting.

Prime Coat; Baking; Final Hot Spray; Accessories

After the engines are re-hung on the conveyor, they pass through the priming booth, then again through electric drying units. They continue from these drying units through the main paint booth where the final coating of paint is applied, using the hot-spray method. The engines then arrive at a long bench where they are removed long enough to mount all accessories that do not require painting. These accessories include the various caps, covers, plated metal handles, company insignia, etc., to complete assembly.

Following this final assembly operation, the engines are placed on a metal belt-type conveyor that carries them into the final inspection room. Here each engine is again run up and given final checks. When accepted by the inspectors, the engines are placed on a conveyor that carries them out of the inspection room and to a point from which they are transported to the shipping department.

It will be noted from the above that, except for ultra-modern conveniences, McCulloch Motors Corp. uses no special techniques in the final finishing of their predominantly magnesium products. It is logical to assume that their success with this difficult metal stems from pre-finish handling to keep the metal corrosion-free and in the best condition for final finishing. There are no "sealed in" pockets of corrosion, no haphazardly assembled bi-metal electrolytic cells, no potentially dangerous deposits of dirt, scum or other soil entrapped beneath the final coating to start or continue a deteriorating action.



After run-up and hand cleaning, engines pass through this overhead infra-red drying oven. One of the red-hot resistance elements is visible in the illustration.

Avoid Sealing in Trouble When Finishing Any Metal

Herein lies the solution to many serious industrial finishing problems, whether or not magnesium is involved. Too often, the final coating on a product is regarded as a bulwark of protection. Too little attention is paid to the numerous contingencies that may result in an attack from the rear. Trying to "seal in" such dangers with a protective paint film is analogous to

for volume finishing

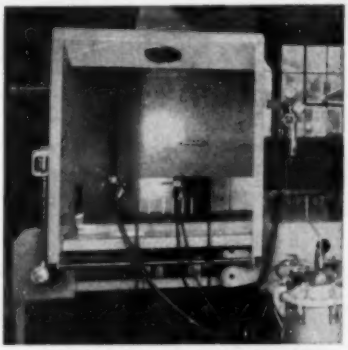
OF DEFENSE PARTS

CAPITOL HIGH SPEED

ELECTRIC SPRAY-BAKE

CONVEYOR MACHINE

It will accommodate pieces of from less than 1-in. diam. to over 12-in. diam., which require a high quality finish, such as shell noses, cartridges, weapon parts, also clocks, pens, pencils, door knobs, etc. Positioned on work holders, pieces are automatically sprayed, travel on through a drying chamber for solvent evaporation, and then into electric strip-heated bake oven from which they emerge for a cooling period before being removed.



View of booth showing automatic spray guns — lower view shows conveyor arrangement and drying and baking compartments.

Recommended for speedy, high quality production, and exceptional savings in coating pieces of various sizes and shapes that are difficult to handle.

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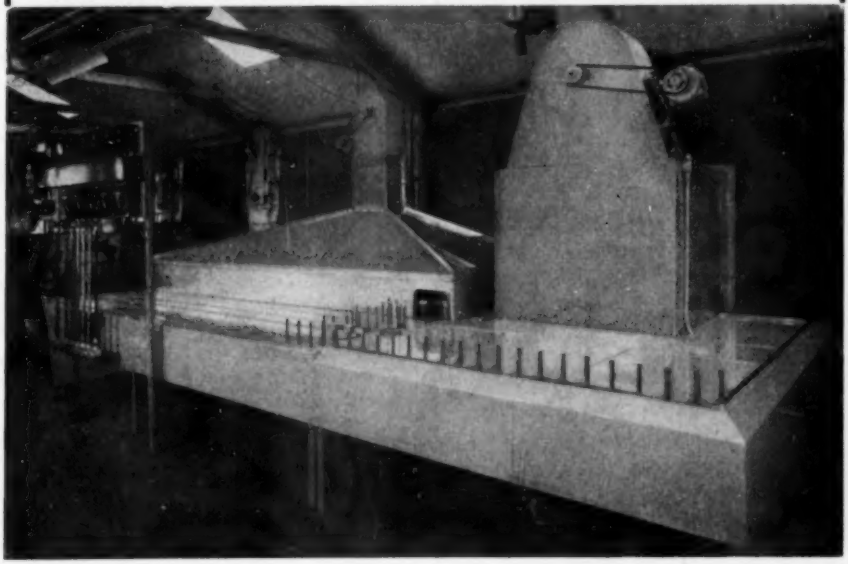

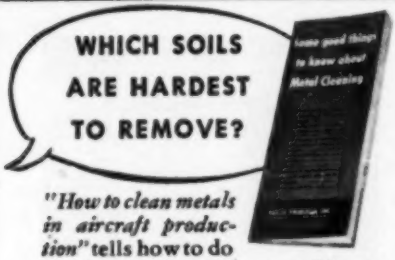

"How to clean metals in aircraft production" tells how to do the hard jobs easily, speedily, economically.

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Final inspection booth. Here the completely assembled engine is given a final run-up and tagged as ready for shipping department.

trying to seal light rays in a glass bottle. They will find an "out." Too often this "out" occurs after the product is in the hands of the customer. And when this "bulwark" aspect of the paint film is breeched from the rear, deterioration of the remaining paint film and the underlying metal follows as a matter of course. [END]

Airfoam vs. Dry Chemical To Put Out Fires

THE FOLLOWING questions have been raised: "What happens to mechanical foam when applied to a flammable liquid fire simultaneously with dry chemical? After dry chemical? Ahead of dry chemical?"

Assuming that dry chemical has been used to extinguish a flammable liquid fire but for some reason a reflash occurred and then mechanical foam is applied on the fire (on top of the residual dry chemical); it will be found that airfoam formation is rapidly destroyed and nothing re-

mains but the water content of the airfoam.

Contrariwise; if a flammable liquid fire is completely extinguished with mechanical foam and then, should dry chemical be applied on top of the airfoam blanket the airfoam blanket appears unaffected.

Presumably in the presence of heat; one ingredient, common to practically all dry chemical formulae, which we have examined to date in our testing laboratory, is incompatible with airfoam and thus causes it to break down.

In view of the above it is our opinion that mechanical foam and dry chemical should not be applied simultaneously to a flammable liquid fire and furthermore that if dry chemical has been applied to the fire area, extinguishing efforts thereafter using airfoam will be most difficult and even unsuccessful.

Similar tests have been conducted with chemical foam and it has been found that this incompatibility does not exist in a foam which has been produced by a chemical reaction.—*by American-La France Foamite Corp. in Chemical Safety.*

Pittsburgh Coke & Chemical Co. Releases New Product Booklet

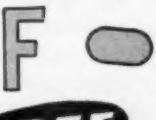
The Pittsburgh Coke & Chemical Co., Grant Bldg., Pittsburgh 19, Pa., has compiled a summary of the principal products of five of its divisions in a new booklet entitled, "Pittsburgh Chemicals".

The 12-page bulletin lists important uses and applications of the products and, whenever possible, their specifications. There are sections devoted to the company's Coal Chemicals, Plasticizer, Activated Carbons, Protective Coatings and Agricultural Chemicals Divisions.

NEW
MASKING METHOD
for SPRAY PAINTING • PLATING • SAND BLASTING
PRE-CUT SELF-STICKING QUIK-MASKS

Hundreds of plants now using Brady QUIK-MASKS are saving time and money **by completely eliminating** costly hand work, use of stop-off materials and metal shields. QUIK-MASKS are **pre-cut to the exact size and shape you need.** Protect name plates, machined parts, plated and polished sections, holes, threads, etc., from paint, plating and cleaning solutions, oils, acids and sand blasting.

QUIK-MASKS are pre-cut from special "SCOTCH" brand plating and masking tapes. They stick without moistening—are quickly applied and removed. Circles, squares, rectangles, hexagons. letters and numerals stocked in many sizes. Nameplates and other specials made to your exact requirements.



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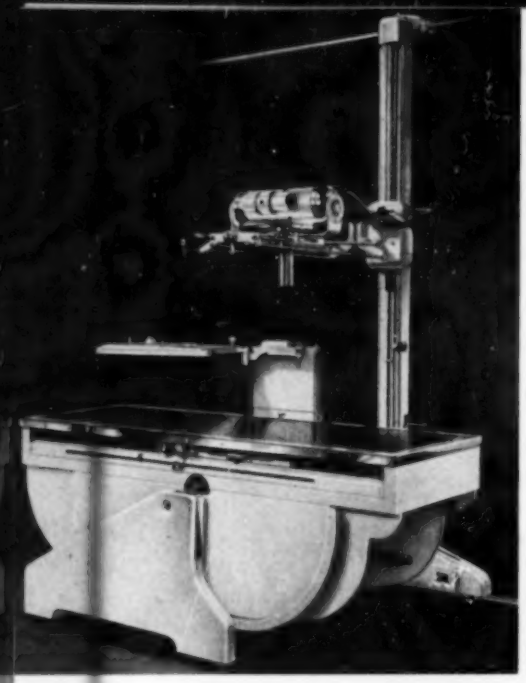


Cast iron, sheet steel and aluminum parts — they must be cleaned and treated to receive long-life, resistant, synthetic bake finishes in off-white and gray-green hammered metallic.

BY J. LACHENMAN
Paint Department Supervisor
Kelley-Koett Mfg. Company

Finishing X-Ray Apparatus

THE FINISH on X-Ray apparatus must meet several very exacting demands. First, it must be durable, for much of this apparatus is in daily use over exceedingly long periods of time. The color must be a neutral tone so that it will blend well with every color scheme in doctors' offices, clinics or hospitals. The finish must be impervious to alcohol, water, barium and other diagnostic solutions. And the surfaces must be smooth so they can be kept spotlessly clean.

We have two standard finishes that meet these requirements. One is known as Kelekote, an off-white baked synthetic enamel; the other is Kelekote Metallic, a gray-green hammered finish which is also a baked synthetic enamel. Of course, some apparatus is finished according to the customers' color specifications to conform with their specific requirements. We are in position to put on these special finishes.

Cleaning Methods to Suit Type of Work

Parts that go to make up X-Ray apparatus are widely diversified as to metal, shape, size and weight. Because of this diversification it is impossible for us to use ordinary metal cleaning methods or equipment. Then too, we are not confronted with removing stubborn drawing compounds, but only light oils, dirt, finger marks and rust spots. [*Continued on page 38*]

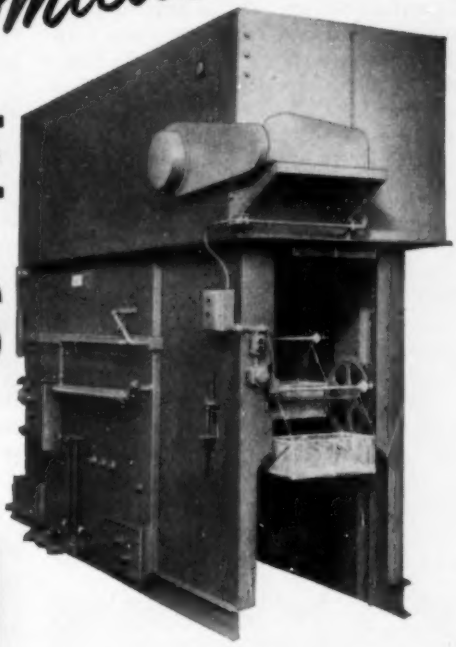
Economical

BLAKESLEE

SOLVENT VAPOR

DEGREASERS

USE LESS SOLVENT



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Blakeslee Solvent Vapor Degreasers USE LESS SOLVENT because of the patented construction and operational features. Metal parts are made chemically clean and dry in just a few seconds. Save time, labor, rejects with a Blakeslee Solvent Vapor Degreaser. A Blakeslee engineer-trained representative is available to solve your specific degreasing problems.

G. S. BLAKESLEE & CO.

1844 S. 52nd Avenue • Chicago 50, Illinois

New York, N. Y. Toronto, Ont.

We use aluminum, sheet metal and cast iron parts. For instance, X-Ray table bases are made of heavy cast iron. It would be impractical to use these castings directly from the foundry, therefore an adequate stock of them is kept in the parts stock room. There they are bound to accumulate some rust spots.

Before they enter the finishing room the iron castings are immersed in a phosphate solution from 20 minutes to one hour, depending upon the rust condition. This treatment removes all traces of rust and etches the surface for prime coating. All sheet steel parts are hand washed with acetone.

Practically all apparatus has some aluminum parts, large or small. Like the sheet steel, these aluminum parts are hand washed in acetone. Then they are oven dried for 45 minutes to one hour at temperatures ranging from 300° F. to 400° F., depending upon the size of the part and the thickness of the cast metal, to relieve any trapped air or gas. This oven drying serves to prevent any blistering in the subsequent finish. After oven drying and before finishing begins, all parts are carefully tack ragged.

Moving portable racks of coated parts into batch type oven where coatings are baked.

Wet sanding primed and filled pressed metal surfaces to insure a smooth top coat finish.

Bake White Finish—Prime; Filler; Prime; Top Coat

All parts that are to be finished in an off-white are given a spray coat of white synthetic primer. On all aluminum parts only this prime coat is baked for 30 minutes at 300° F. On all other parts—cast iron and steel—a flash (air drying) period of five minutes is allowed; then a coat of gray synthetic filler is sprayed on. These parts are then baked for 30 minutes at 300° F.

After the surfaces have become

(Continued on page 40)

To meet MILITARY SPECIFICATIONS

for Cleaning • Rust-Removing • Etching Phosphatizing and General Metal Conditioning of all kinds of Metal Surfaces

Use PREP PRODUCTS!

SPECIFICATION NUMBER	CONFORMING MATERIAL
MIL-C-5541 (see also QPL-5541-1)	Lyfanite
MIL-S-5002	Lyfanite
MIL-C-10578	
Type 1	Metalprep Nos. 77, 102—Alumiprep No. 1
Type 2	Metalprep Nos. 10, 15—Alumiprep No. 20
JAN-C-490—Grade II	
Type 2	Emulsoprep
Type 4	Metalprep, Prep-Pik-L, Alumiprep, Prep-Rite
Type 5	Metalprep, Alumiprep, Prep-Pik-L, Prepwash
Type 6	Emulsoprep No. 710-E.C.
U.S.A. 3-213	(See MIL-C-10578)
U.S.A. 3-192	Metalprep Nos. 28, 10, 15
	Alumiprep No. 20
U.S.A. 98-20007	Metalprep Nos. 10, 15
	Alumiprep No. 20
	Prep-Rite No. 16
U.S.A. 72-53	(See AN-F-20)
AN-F-20	Lyfanite
	Metalprep Nos. 10, 15, 77, 102 / Alumiprep Nos. 1 and 20 — See MIL-C-10578
AN-E-19	Lyfanite
AN-C-170	(See MIL-C-5541)
TAC-ES-431	(See MIL-C-10578)
AXS-1245	(See JAN-C-490, Grade II)
Engineering Corps—T-1184	Metalprep No. 28
U.S.N.—Appendix 6	Metalprep

51-C

Send for Data Sheet • Advise Govt. Spec. Number

NEILSON CHEMICAL CO.

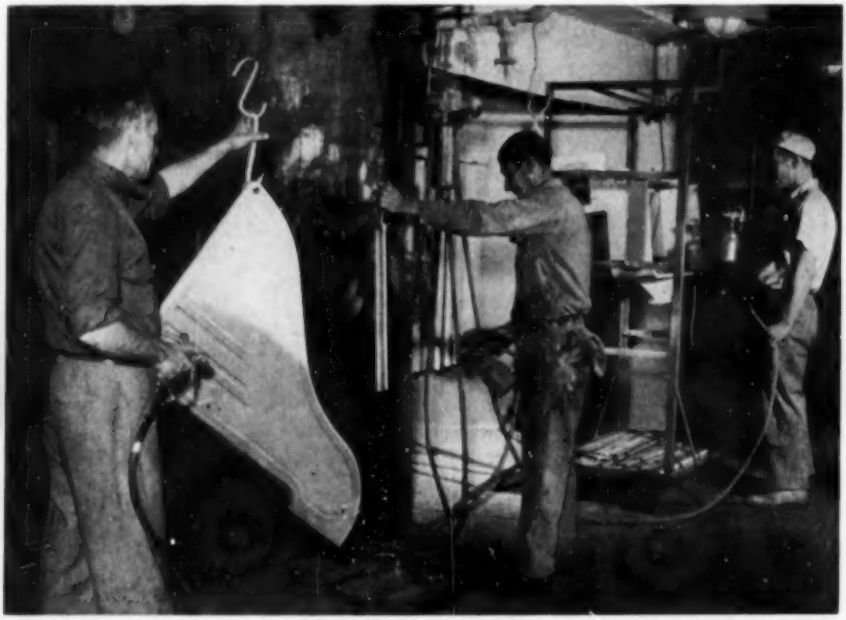
2682 Tecumseh Rd., Windsor, Ont. — 6562 BENSON ST., DETROIT 7, MICH. — 3411 Union Pacific Ave. Los Angeles 23, Calif.

cool they are wet sanded with No. 280-A wet-or-dry sandpaper, rinsed and blown clean with compressed air. Parts are allowed to air dry thoroughly before a second prime coat is spayed on. This white synthetic primer is allowed to flash for five minutes; then the off-white synthetic enamel is applied. Sheet steel parts are baked for 30 minutes at 300° F., while castings are baked for 45 minutes at the same temperature.

For the gray-green hammered finish, all parts receive identical cleaning and handling operations used to prepare them for an off-white finish. After their surfaces have been tack ragged, all parts are given a spray coat of white synthetic primer and baked for 30 minutes at 300° F.

When they are cold all castings are carefully inspected; those that require filling in places, due to imperfections, are knife glazed with a synthetic filler. In about an hour these places are lightly sanded and then tack ragged.

The glazed areas are spot sprayed with primer and usually they are allowed to air dry if the areas are not too large. If the glazed areas are fairly large, those parts are placed in the oven to bake the finish. Then the gray-green, synthetic, hammered finish is sprayed on in one single operation.



Spray finishing diversified parts of X-Ray apparatus. The second operator sprays parts that weigh less than one pound while the first and third operators finish heavy castings. Some parts are so heavy they are spray painted while resting on castered trucks.

Shop Lighting OK?

IT'S TIME TO check up on factory lighting. Shorter hours of daylight are at hand. This check-up may reveal an entirely new question as to whether there ever was sufficient facilities to satisfactorily light certain operations or jobs.

Several good manuals on industrial lighting have been published by large manufacturers of electric lighting facilities. These manuals are free. Also available are experienced, well informed illuminating engineers who will test and recommend proper light for different operations and tasks. Good lighting is a desirable and necessary investment.

Cutaway model of a DeVilbiss air compressor holds the interest of two Frenchmen, part of the group of 12 who recently visited the DeVilbiss Co.'s main plant to study production methods. The group was the 100th French team to be brought to the United States under the technical assistance program of the E. C. A.

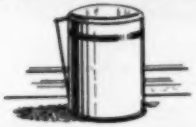
D. O.

(DEFENSE ORDER)

or

B. A. U.

(BUSINESS AS USUAL)



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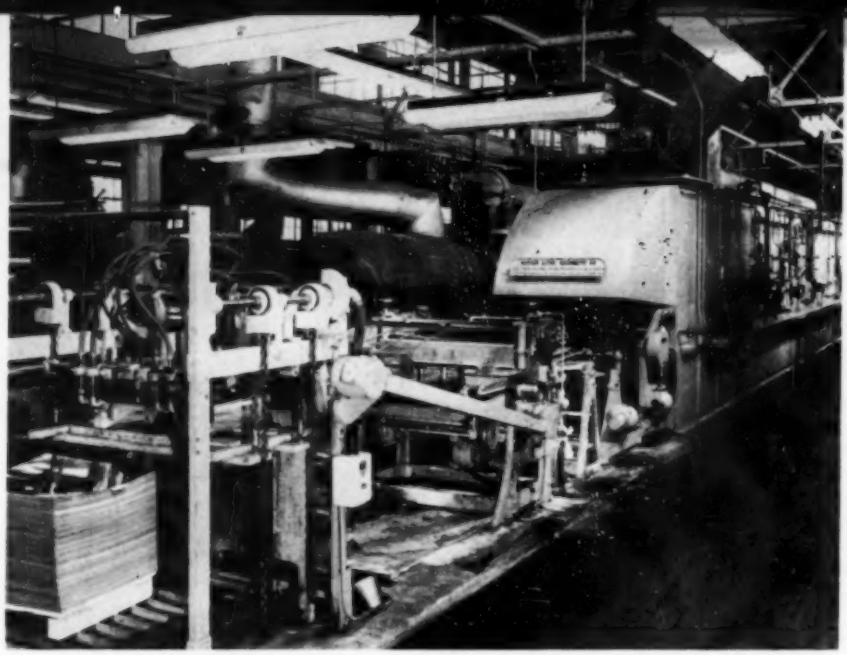


One of the roller coaters with automatic feed (at extreme left) and conveyorized oven (to the right). This is where sheets are spot coated with white background for lithographing.

Lithographing Metal Cans

BY T. A. GRIFFITHS

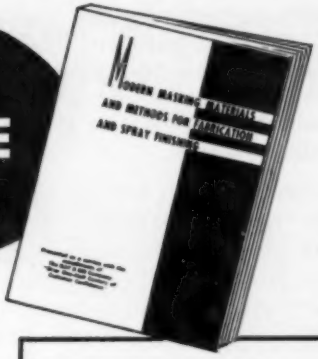
General Foreman, Lithography
The Standard Oil Company
Lithograph Can Factory

METAL CANS used as containers for oils, antifreeze and other products sold in gasoline service stations must be coated with a durable finish that can withstand bumps, knocks and dents, and not peel or chip. The finish must withstand exposure to all kinds of weather, for many gas station operators stack these cans outside to serve as an advertisement and as reminders for their customers.

Every can must be neat and attractive; the brand name and any printed name or message must remain legible at all times. Whether or not you are aware of it, when you drive your car into a gas station or garage to buy oil or antifreeze, these clean attractively printed cans do have a distinctive advertising value.

We use 36 to 24 gauge black and tin plate for making the various types of cans for oil products and

Kay & Ess GIVES YOU THE ANSWERS...



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Yours for the asking! No matter what your product, this informative, up-to-the-minute, detailed manual will be of real help to your finishing engineers, department superintendents and shop foremen. In it you'll find many ideas to help you save time, cut costs and get better product quality But act quickly! We have only a limited number of these valuable books and want you to get yours.

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Authored by the well known industrial writer Arthur P. Schulze, this illustrated book covers the field of 'Modern Masking Materials And Methods For Fabrication And Spray Finishing.'

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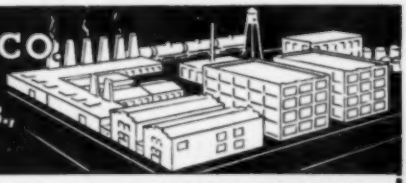

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MAIL THIS COUPON

Please send me the engineering manual "MODERN MASKING MATERIALS AND METHODS FOR FABRICATION AND SPRAY FINISHING."

Name_____

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antifreeze compounds. The metal sheets are of such size that, after being lithographed, they may be cut to make two to 25 cans, depending on the size of the finished container.

Roller Coaters; Lithographing; Conveyorized Oven

Our equipment includes two complete roller coating units. Each unit consists of an automatic feed with elevator platform, a roller coater and a conveyorized oven, two single lithographing presses with automatic feeds and ovens. We also have a combination unit consisting of automatic feed, two lithographing presses, a roller coater and conveyorized oven. This equipment is flexible enough and has enough capacity for lithographing not only containers but many other metal products.

In the production of cans one roller coater is used for applying an overall coat of lacquer to one side of the metal sheet. It is baked for 11 minutes at 385° F. This lacquer base material forms a protective inside coating for antifreeze and other special product cans. The same roller coater is also used to apply an oil or synthetic base enamel to one side of the sheet to form the outside coating of can bottoms.

Spot Roller Coating the Background Color

After the protective lacquer coating is applied to one side and baked, the sheets are moved on to the second roller coating unit where the white background for lithography is spot coated. By spot coating I mean that it is not a complete overall application. The number of cans to be cut from a single sheet determines whether one or two strips of bare metal must be left for soldering.

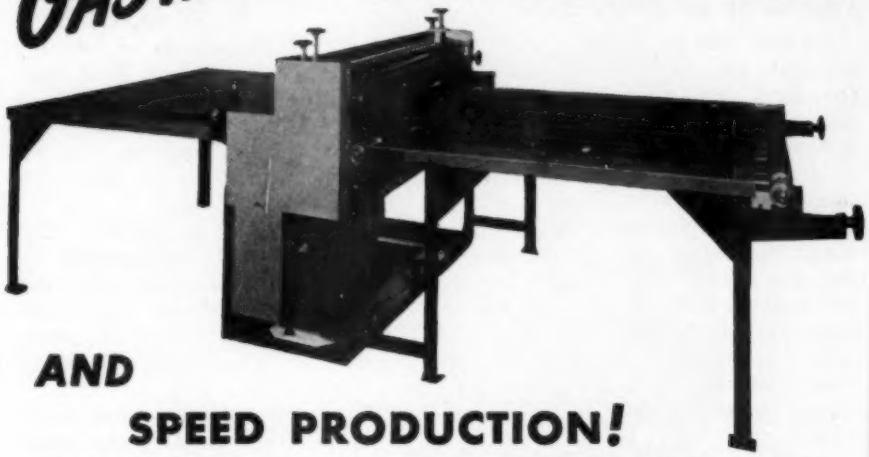
Spot roller coating is accomplished by using divided rollers with grooves of correct width cut into them (around their circumference) so that no paint will be carried down to the sheet metal in these spaces.

For the white background coat we use a synthetic enamel that has a specific gravity of 52 (Baume Test); this enamel is applied at a film thickness of 11-mm. (Pfund gauge). The enamel coat is baked for 11 minutes at 350° F.

To give you some idea of the production of this unit, it will coat 72 sheets per minute; there is a 13-minute cycle from the automatic feeder to the exit end of the oven. The cycle is a direct variable of the length of the oven and the number of sheets per minute that are run through the unit. A forced air cooling zone at the exit of each oven cools the coated metal sheets so that operators can handle them safely and comfortably.

Precoated sheets are transferred to either the single or combination lithographing units, depending upon the number of colors to be lithographed and the volume of production. For comparatively short runs and single color jobs, the single press is used. On two and four colors and runs of 50,000 or more sheets, the combination of two lithographing presses with a roller coater connected to apply the protective varnish coat is used. When the single lithographing press is used, finished sheets are then taken

GASWAY ROLLACOAT FINISHERS CUT COATING COSTS



AND SPEED PRODUCTION!

The benefits to be gained by using the Rollacoat method of applying finishes and protective coatings, to practically any type of flat materials, are three-fold. In the first place coating speeds are greatly increased over those of any other method and are governed largely by how fast the coated materials can be handled or dried. Secondly, the coverage per sq. ft. per gallon is usually at least 50% greater, the only loss being the paint removed from the rolls at the end of a run. In the third place you obtain finer quality of finish due to accurate control of thickness and evenness of coat.

The applications for Rollacoating are numerous. Top, bottom and sides of practically any type of flat material, whether sheet or coil stock, can be coated by a single pass through the machine.

Special equipment for cleaning, treating, coating, drying, and rewinding strip in continuous process can be constructed to special order.

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Write or wire today for the 12 page Gasway illustrated book describing Rollacoat Finishers, their possibilities and limitation.

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to one of the single roller coaters where the protective varnish coat is applied.

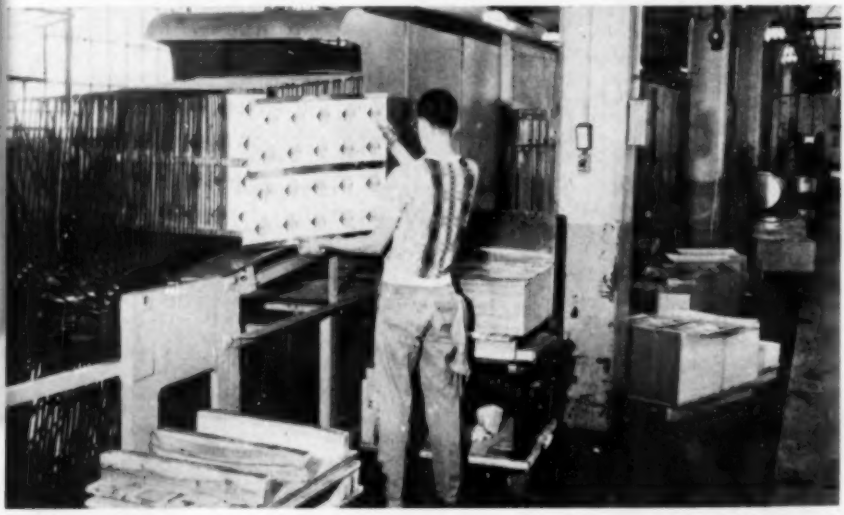
Lithographing Two Colors and Varnishing on Single Unit

On two and four-color jobs that are run on the combination unit, the first lithographing press applies (for instance) all of the red letters and the red in the design or trade mark. The second press then applies all of the blue color. Both are extremely fast drying inks. Depending upon the gauge of the metal and the design being printed, the combination unit has a capacity of between 62 and 90 sheets per minute. The heavier the gauge of metal, the slower the sheets must be run through the unit.

As sheets of metal leave the second lithographing press with the complete design and printing applied in two colors, they are conveyed by narrow belts through the roller coater where a special formulated varnish protective coat is applied. Varnish is applied at a viscosity of 35 seconds at 78° F., as measured in a No. 4 Ford cup. Film thickness is 11-mm. (Pfund gauge). This varnish which is rolled on the still-wet ink, has no tendency to smear or blur the printing or design.

Varnish coated sheets leave the roller coater and are carried by narrow belts to the finger-type bake oven conveyor. Sheets are baked for nine minutes at 300° F. when the unit is operated at 65 sheets per minute.

In the event that 4-color work is required, the rolls of the roller coater are separated sufficiently so that metal sheets printed in two



Exit end of combination unit where two colors are lithographed and a protective varnish coat is applied and baked in one operation. The sheet shown will make ten cans when cut.

SOLUTIONS THAT SOLVE PROBLEMS

Often overlooked in many manufacturing processes is the scientific selection of protective coatings and adhesives. Careless selections may mean costly faults or failures in the final product . . . a lost customer . . . a blemished reputation.

The products of Pierce & Stevens, Inc., however, are scientifically tailored to remove the hazards of doubtful performance. In commercial or defense production, we confidently offer the specialized talents of an experienced staff.

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A booklet entitled "ALL ABOUT US" will be sent if requested on your letterhead.

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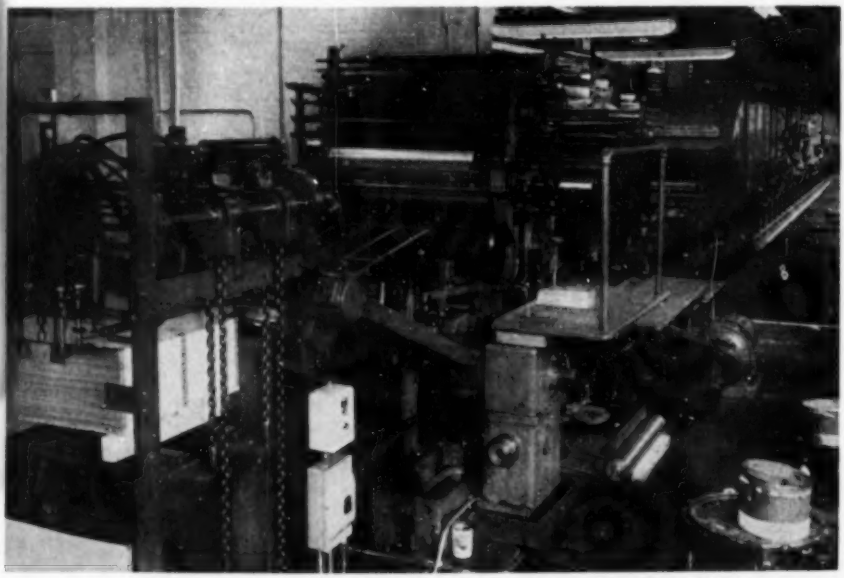
colors can pass through without touching the rolls, and move directly into the oven. These sheets are then returned and the final two colors are applied in the combination unit, but this time they receive a coat of varnish in the roller coater before entering the bake oven.

After the thin metal sheets have been lithographed they are put into finished can production units in the can manufacturing department. First each sheet is split into separate can bodies and delivered to the can production lines. These lines consist of four basic units: The bodymaker which forms and solders the body into a tube; the flanger which flanges the ends of the tube preparatory to double seaming; the double seamer which seams one end on the can, and the tester which checks each can for possible leakage. From the tester the cans are conveyed to the filling department where they are filled with whatever product they are to hold, and the tops are seamed on. Here the individual cans are automatically packed in cartons and shipped to the dealer.

All can designs and much of the art work on other lithographed products originate in our art department. We make all of the etched zinc plates for all lithography. The original drawing of the design and lettering is produced in the desired colors, and this is photographed directly on sensitized



The combination unit—automatic feeder (at extreme left), two presses, roller coater and oven. Roller coater is between the second press and the long oven which extends far to right.

CUT SPRAY PAINTING COT on many defense items

such as the shells and rocket bombs illustrated by sharply increasing production through the use of

ELECTRO-FORMED METAL MASKS

(Made by patented process)

Designed to fit into your conveyorized equipment.

We also design, engineer and build

COMPLETE AUTOMATIC SPRAY EQUIPMENT

(with or without masks)

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FIXTURES AND TOOLS FOR . . .

positioning parts in masks while painting or holding parts in place for other operations, such as welding.

Plug-type masks for keeping depressed areas clear, while spraying background; lip-type masks for protecting the background while painting depressed areas and block cutout plane surface type masks.

Clean, sharply defined letters and decorative effects are obtained on intricate die castings, stampings and plastic forms by accurate control of painted areas with no fogged edges. After-wiping or buffing off of overspray is unnecessary.

The "loose" inside of letters and numerals, such as "0" and "6", is held in position by arched bridging to eliminate objectionable "ties."

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zinc sheets or plates through color separation filters. For our work, finished zinc plates are numbered and indexed in storage drawers for reuse. The printing surface is protected by a thin coating of asphaltum while the plate is not in actual use on the press. This is done to prevent the zinc surface, which carries the design, from oxidizing due to exposure to the air.

Decentralized Finishing

FOR YEARS it has been the custom in most plants to locate the finishing room in one particular place. Work to be coated must be brought to and taken from the finishing room either by conveyor, boxes handled by power trucks or in hand trucks. For many types, sizes and kinds of products, this is the logical system to follow. But for some other products there may be a better and more economical way, depending upon the size of the plant and products manufactured or processed.

Recently I was in quite a large plant where a wide variety of small products are made. Almost any or all of these products, or at least the component parts, could easily be carried about by a man. Parts are made on various production lines.

After the last machine in the line there is a power spray washer with dry-off oven attached, both of which are serviced by a self contained conveyor. In some places one of these washers is located at the end of two lines to clean the metal parts coming off both lines. Immediately be-

From the seven basic Clair designs, a custom-made machine can be developed to give greatest efficiency in your surface finishing operation. With totally enclosed, abrasion-proof hydraulic circuits and adjustable controls, Clair Machines provide the precision and trouble-free operation necessary for efficient surface finishing on a production basis.

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Specialized Machine Equipment For Glazing and Polishing Operations

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yond the washer there is one or two waist-high spray booths where the cleaned parts are coated and hung on a conveyor which carries them up to an extremely high oven for baking. This same oven conveyor extends on to the parts stock room and to one of the assembly lines.

At the end of another production line there is a washer with a dry-off oven. As parts are removed from the crossbar type conveyor they are placed on the vertical spindles of an automatic spray machine to be coated and baked in an attached infra-red electric oven. Upon removal from the automatic spray machine the parts are hung on the same conveyor containing parts baked in one of the high ovens to be carried to the assembly lines. The layout and location of production lines in relation to equipment and ovens are highly important in such a setup.

This plant is really a study in the use of long and short conveyor lines, tiered, castered hand trucks and large tote boxes which are handled by power trucks. Most important of all, however, is the fact that *they have taken finishing to the production lines instead of transporting the product to a central finishing room.* Naturally they have an adequate exhaust system to remove all overspray and fumes. The floor area surrounding the power washers is dry, as the dry-off oven is connected to the washer, and the areas around the spray booths are clean because of an efficient ventilating system.

Every product does not lend itself to this method of operation but a system of decentralized finishing does seem to merit consideration, especially in a large plant where a variety of allied products are manufactured.

"Spray Painting Troubles; Causes and Remedies", a printed sheet 11x22-in. is offered free by Bede Products, Inc., 4311 Ridge Road, Cleveland 9, Ohio.

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You'll get a cleaner surface with the improved DETROIT HANDY "TAC" RAG. Standard of your FINISHING INDUSTRY for 17 years. Removes all particles of dust, lint and sand. Non-inflammable! Order from your supplier today, or send for sample.

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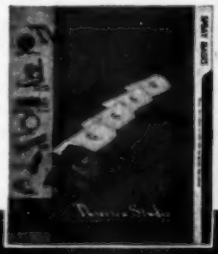

Thievica Studio
409 Henry Ave., S. E.
Grand Rapids 6, Mich.

To Protect Equipment That's Being "Put in Moth Balls"

BY P. C. BARDIN
Associate Editor

The use of rust preventative oils, strippable coatings and sealed moisture proof packages for the protection of machines, parts and various other equipment that are to be put out of service for several months or even years, but which must be in condition when they are re-activated.

IN THESE DAYS OF changing production to keep in step with world changing conditions, industry must be highly flexible. A long term contract for defense work may put some production equipment temporarily out of the picture—but if it is allowed to stand unprotected while it is idle, time and corrosion will take its toll. However, if this idled equipment is properly protected, regardless of how long it is inactive, it will be in excellent condition when reactivated.

What Influences Selection of Protective Materials

The type and size of equipment and the probable length of time it may be inactive—these factors will determine, to some extent, the protection that is necessary or desirable. Even though it is to be "asleep" for only six months, some protection should be provided—and certainly a really effective protection should be given for longer periods.

Some experience in protection of equipment was obtained at the close of World War II when entire plants were deactivated. Since some of these same plants now have been reactivated, an opportunity is afforded to determine the value of that protection.

Two types of protection are available. One includes the use of rust-proofing oils or compounds for coating unprotected surfaces that otherwise would become rusted, corroded or discolored by exposure to the atmosphere. The other includes the use of strippable plastic coatings which seal the entire piece of equipment as if it were encased in a wrapper, package or cocoon. In some cases, where the period of "sleep" is to extend over several years, or where extreme corrosive conditions exist, it may be advisable to combine both methods of protection.

Corrosion Inhibiting Oils and Compounds

First, let's consider oils and compounds. I shall avoid using brand names but will substitute numbers, as all of the oils and compounds

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are based on U. S. Army or Ordnance specifications, all of which are a matter of public record.

No. 1 meets U. S. Army specification 2-120; oil, lubricating, preservative; special.

No. 2 meets U. S. Ordnance specification AXS-934 Grade 2, oil engine; preservative.

No. 3 meets U. S. Ordnance specification AXS-674, superceded by U. S. Army specification 2-122; oil, lubricating; preservative; medium.

No. 4 meets U. S. Army specification 2-84-B; compound, rust preventive; light.

No. 5 meets U. S. Army specification 2-82-C; compound, rust preventive; heavy.

No. 6 meets U. S. Ordnance specification AXS-673; compound, rust preventive; lead base.

Clean All Surfaces to be Given Protection

First, it is essential to clean all metal surfaces of whatever equipment is to be protected. This may be done by dismantling the machine and washing the parts in a suitable solvent. After complete drying, the various parts should be protected with the correct type of oil or compound as the parts are reassembled, and finally the entire unit should be given an over-all coating.

A brief description of the oils and compounds, with typical examples of their use, follows:

No. 1 is a light oil used for spraying on the interior working parts of such instruments as recorders, thermostats and automatic controls. Excellent results are obtained with a thin film of oil. After application the instrument case is sealed to keep out moisture and dust. This may be done either by sealing around all openings with a heavy compound, or the entire case may be enveloped in a plastic film which I shall discuss later. Another merit of this light oil is that upon reactivation of the treated equipment, the thin film of oil does not need to be removed.

Rust-Preventive Oil Coatings

No. 2 and No. 3 are both equal to SAE-30 grade oils, and may be used interchangeably since they have approximately equal rust inhibiting characteristics. These oils may be used to spray the insides of tanks and accumulators, to fill pump and turbine cases, compressor cylinders, relief valves, lubricators, and for dipping bundles of tubes to coat them inside and out.

No. 4 is a light compound having about the consistency of cup grease for lubrication. It is suitable to use on equipment that will be protected from direct exposure to the weather. It is not easily applied as No. 2 or No. 3; however it affords a better and more efficient coating on machined parts and areas such as machine beds, cutter heads, knife holders, plug and governor valves and the internal parts of control valves. It is also useful for coating the insides of condensers and exchanger heads. The compound can be removed with warm kerosene.

Grease and Oil Compounds Have Many Merits

No. 5 is a heavy grease-like material suitable for protecting equipment that will be partially or completely exposed to the weather.

(Continued on page 56)

"Don't worry Grandma... he ain't about to hurt that *VEDOC* finish."

Folks soon find out your washers really stand up when they are protected with *Vedoc*. It's the hardest wearing, one-coat baked finish you can find. It matches perfectly to Porcelain enameled tubs . . . has high resistance to soaps and alkalies . . . is easily cleaned . . . and gives maximum protection against rust.

Vedoc finishes are formulated to work best with your particular production process. We make sure of this with every order for Vedoc finishes. Write us today for your requirements.

Remember, Ferro is set up to provide complete Organic Coatings service . . . from the development of specialized coatings, to the design and installation of complete Finishing Oven processes.

FERRO CORPORATION

LIQUID PLASTICS DIVISION

4150 East 56th Street • Cleveland 5, Ohio

Vedoc

This grease is difficult to apply unless it is thinned with a solvent, or thinned by heating. Of the two methods, heating is recommended as the addition of solvent may detract from some of the material's corrosion resistant properties. It is suitable for use on exposed pumps and turbine shafts, piping, couplings, valve stems and wheels, and other equipment permanently located outside buildings.

"I used to have a heckava time getting the paint off too—until I wised up to that peelable spray booth coating stuff."

When equipment is to be reactivated it is somewhat difficult to remove a coating of the No. 5 material; however, it can be done by washing with warm kerosene. Tests have proved it to be an efficient corrosion inhibitor for equipment stored outside.

No. 6 is an oil compound that may be applied by spraying, dipping or brushing. When it dries you have a fairly hard tough film. It is not suitable for use inside compressor cylinders or on bearings. It may be used for outside application on pumps, turbines, valves, pipe lines, heater tubes, burner headers and accumulators. This material has one weakness—a tendency to "alligator" when exposed to the direct rays of the sun; but this does not detract from its corrosion inhibiting properties, as the film only becomes rough; it doesn't break through to expose the bare metal.

When the time for reactivation comes, this film is generally allowed to remain on the equipment. Actual tests show that paint may be sprayed directly over it.

Protection with strippable Plastic Coatings

Equipment to be protected with strippable plastic coatings should be thoroughly cleaned and dried the same as if it were going to receive a coat of paint or lacquer. In this field of protection, two different methods of application are employed — contour application and package application. In contour application the plastic material is sprayed directly on all metal surfaces of the equipment.

In package application, strips of pressure sensitive tape are applied to the outermost projections of the equipment to form a bridge over the recessed areas. Then a webbing plastic material is sprayed over the metal and the tapes to form a sort of cocoon or package like a paper wrapping. Next a plastic film material is sprayed over the web to

(Continued on page 58)

Military Specification Paints

When you are calculating your bid,
would you like to know for certain:

- What's the latest applicable paint specification?
- How much does it thin and with which thinner?
- How many square feet will it cover?
- How quickly will it dry? Does it bake?
- How much will it cost?
- What delivery can be expected?

When you are awarded your bid,
could you use the Zapon Customer Service Department at no charge to:

- Recommend the most efficient method of application?
- Help train employes on finishing operation?
- Establish check methods to insure performance requirements?

Service from every angle... *that's* ZAPON

ATLAS POWDER COMPANY
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form the completed package which entirely envelops the equipment.

In other cases, instead of using pressure sensitive tape to form the package, the piece of equipment is placed inside a waterproof paper or canvas bag. Then the protective plastic film material is sprayed over the entire outside surface of the paper or canvas covering to seal all seams and pores through which moisture might enter. In still other cases the piece of equipment is completely crated inside a plywood box; then the plastic film material is sprayed over the entire box to seal out moisture, dust and possible fumes.

Dry Air in Package; Keep Out Moisture

It is important to seal moisture out of the package, regardless of how it is formed, but it is also essential to dehydrate the air inside the package. This may be done by placing bags of a dehydrating material inside the package—perhaps with a humidity indicator behind a sealed-in clear plastic window. For long periods of storage it is advisable to coat machined parts with one of the corrosion inhibiting oils or compounds described in the first part of this article.

During long periods of storage, inspection of the equipment may be desirable at stated intervals, say every six months or so. Then the dehydrating agent (if one was used) may be renewed as temperature changes will cause moisture to form inside the package. Also, it is important to know just how effective the protection really is. Because of the time factor or because of extreme corrosive conditions, the method of protection may have to be changed.

Clear Color Coatings; Thickness of Film

Protective plastic coatings are available in both clear and in colors, not for decorative reasons, but to assure a predetermined film thickness, and/or for identification purposes. Most of these coatings are sprayed on. However a dip material is available. Where pressure sensitive tape is used to form the package, a webbing material is sprayed on first; this is followed by the plastic film-forming material to produce a total film thickness of .030-in. to .040-in.

Manufacturers Offer Free Technical Data

Manufacturers of these plastic coatings offer technical data sheets that give detailed information on the material, methods of application and what type of equipment can be protected by their products.

In reactivating equipment, or for inspection purposes, a sharp tool is used to cut or break the film; then the plastic material can be peeled or stripped off the metal surface or package by hand without the use of any solvents.

Author's Note: Acknowledgment is made to the following firms for their kind cooperation in furnishing information for this timely article: Atlas Powder Co., Finishes Division; Better Finishes & Coatings, Inc.; Maas & Waldstein Co.; and Strathmore Products, Inc. All of these companies are producers of protective plastic film materials.

VINYL RESINS include a large number of Polymers and Co-Polymers—all of which contain the group — $CH_2 = CH$. Vinyl Resins in various forms serve nearly all commercial and scientific decorative fields. They lend themselves to most of the functional methods of fabrication. Vinyl Resins can be compounded to be non-toxic, tasteless, odorless and pleasant in appearance. They are thermoplastic or may be modified in compounding to be thermosetting. Resultant coatings have excellent acid and alkali resistance and are otherwise regarded as chemically inert.

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• *Write for your copy of article "Vinyl Coatings for the Metal Decorator."*

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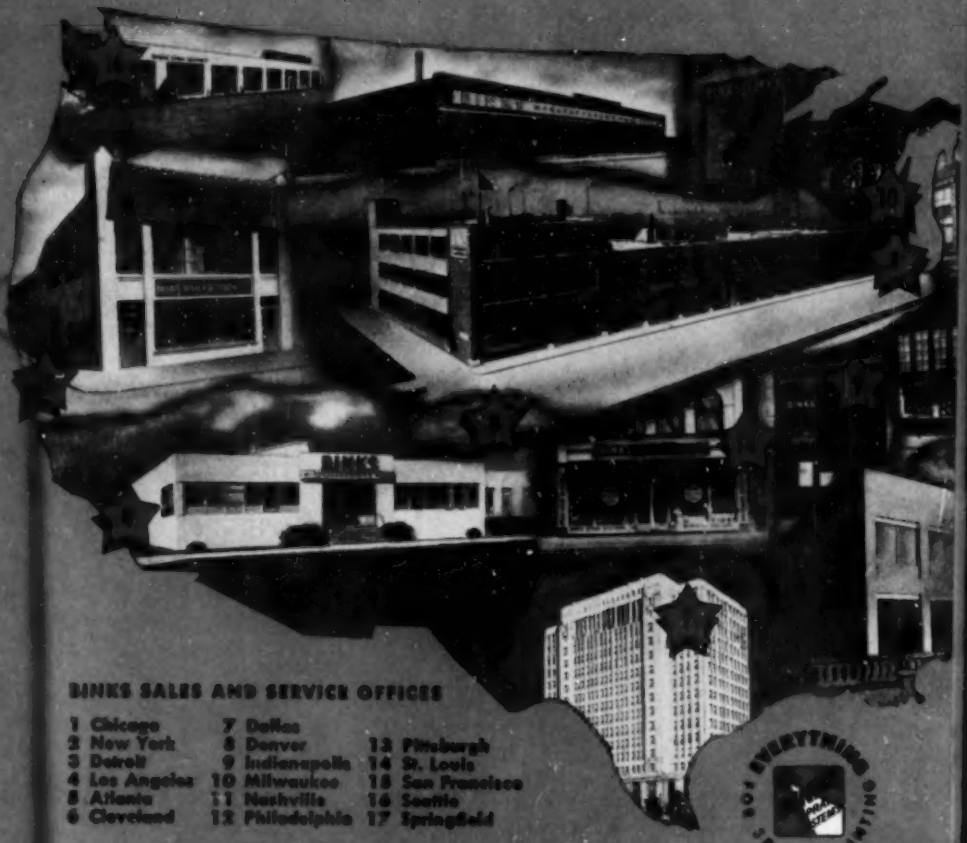

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Screen Process Press prints automatically

BY ALBERT HEEGER

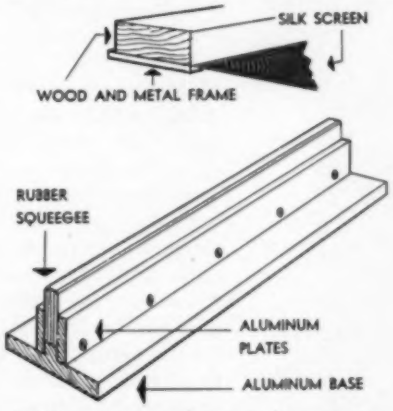
Manager of Screen Process Department for The Donaldson Art Sign Company, Inc.

MORE advancement has probably been made in the silk screen industry during the past several years than during its entire history, and it is an ancient art. Among other things the silk screen printing press is an outstanding development. The press lifts screen processing out of the handwork group and places it in the mechanical production class with lithographing and printing.

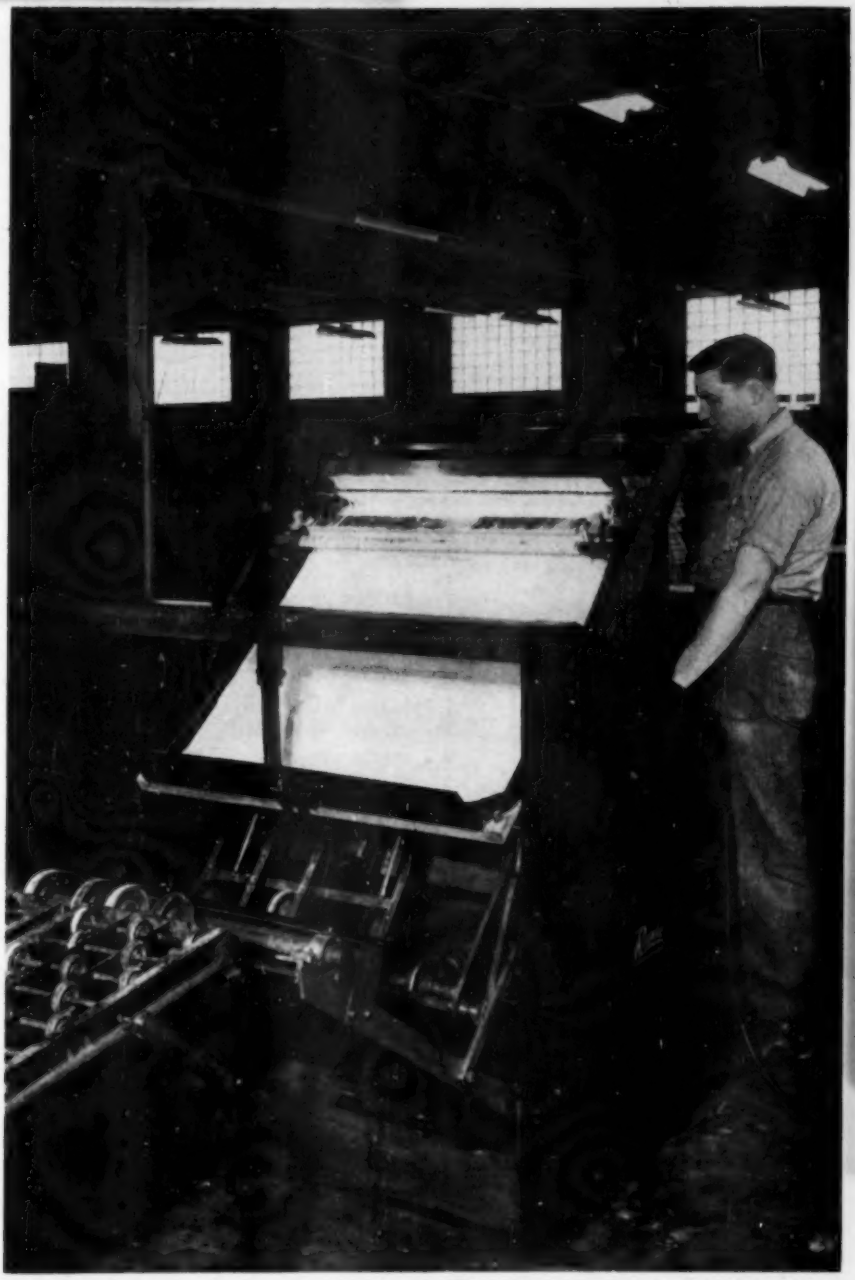
Press Requires Different Type Silk Screen Frame

Let us consider the screen frame for use in a press. It is somewhat different from the usual silk screen frame used in hand operation. It consists of a wood frame with silk stretched across and fastened to one side and then *that silk-covered side is faced with a ⅛-in. thick steel frame which is secured to its wood frame with flat head countersunk screws.* The reinforced wood and metal frame provides rigidity and strength as well as assurance that the frame will retain its true shape while in use. The silk screen is sandwiched in between the wood and steel.

Another feature of this screen process frame is a material reservoir which extends clear across the bottom edge. The squeegee dips into this reservoir and picks up a quantity of process paint to be applied through the screen to whatever is being printed on the bed of the press. [*To page 64*]



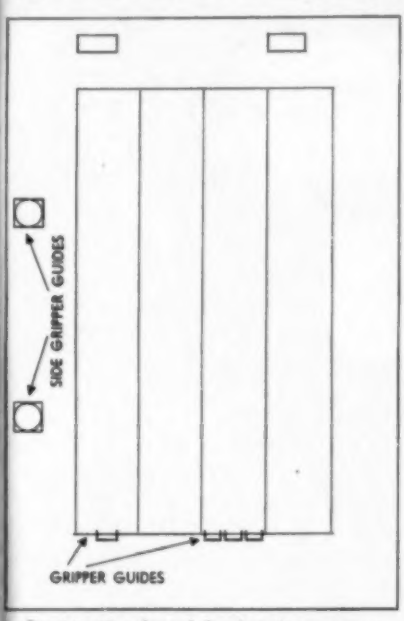
Details of screen frame and squeegee.



Outfeed end of press showing squeegee almost at the end of its up-stroke (at the top it will turn so its blade faces away from the screen) as it travels down. The screen remains fixed.

Use Registration Board to Locate Stencil on Silk

When stencils are applied great care must be used to locate the stencil as nearly as possible in the correct place on the screen in relation to the side guides and gripper guides on the press. This care in location is required to obtain accurate registration of the work, especially where two or more screens are used to complete the



Registration board for locating correct position of stencil on frame.

piece. To obtain exact registration, the press is equipped with adjusting devices by which the screen frame can be shifted as much as ½-in. in either direction.

To find out approximately the location to adhere the stencil on the silk, we use a registration board. This is a piece of flat plywood the full size of our press bed, with lines, side guides and gripper guides indicated in their respective positions. The framed silk screen is placed over this registration board in the same relative position that it will assume on the press. Guide lines are visible through the silk; by this means the location for adhering the stencil to the silk can be determined.

Aluminum Squeegee Holder; How Press Operates

The press is fitted with an aluminum squeegee holder, as shown in the accompanying drawing. This holder is needed so that squeegees of different length, different firmness of rubber and shape of working edge may be used for various types of work. The holder is entirely demountable for cleaning, replacement or repair.

To set up and operate this press is a reasonably simple procedure. The press will take sheets of material as large as 23x31-in., and will print up to 22x30-in. Production on the press ranges from 725 to 900 sheets per hour, depending upon the size and weight of the sheet stock being printed. Of course the heavier the gauge of metal sheets being printed, the slower the production. Both larger and small presses are available.

Screen Stencil Remains In Fixed Position

The framed screen, with stencil adhered, is clamped into place in the press where it remains in a fixed position. The screen does not move during the printing opera-

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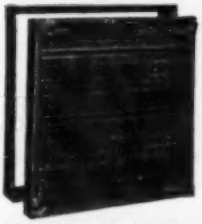
AAF Filters give two-way protection in body finishing operation



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FORD dealer Fred Jones of Tulsa, Okla. prides himself on the speed with which quality work is turned out in his body finishing department. A feature of this operation is the use of filtered air.

Make-up air brought into the finishing room passes through 24 American A/C Washable Filters to prevent dust or dirt from reaching newly refinished surfaces. In turn, air is exhausted through 32 AAF Sinuous Spray Booth Filters which collect the fine paint spray.

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tion. The bed of the press moves to raise the stock up to almost contact with the screen. Then the squeegee goes into action, bringing a quantity of process paint with it, and prints on the up stroke only.

When the squeegee completes its upstroke at the top of the silk screen frame it makes a half turn so that its base faces toward the screen and its working edge faces away from it. The press bed returns to feeding position for the next sheet and releases the sheet that has just been printed. The squeegee completes its down stroke, makes a half turn and picks up a quantity of process paint as it passes through the reservoir at the bottom of the screen frame.

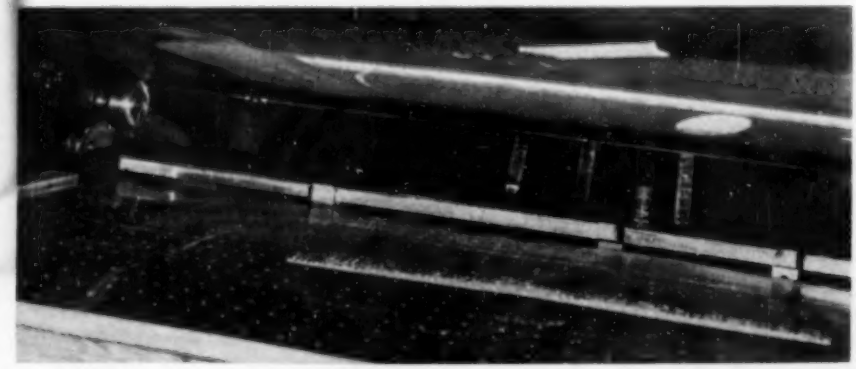
While the squeegee is making its down (idle) stroke the bed of the press lowers to feeding position. Side guides rise above bed level and the gripper guides along the lower edge of the press bed open to release the sheet just printed, and they remain open long enough to receive the next sheet.

When the squeegee starts on its up stroke (pulling process paint over the screen) the side guides drop down below the bed of the press and the gripper guides close to clamp the sheet into fixed position before printing begins. If the sheet has been placed against the side guides and entirely under the gripper guides, registration will be perfect.

In printing small signs, say 10x 12-in.—if they cannot be run in multiple—we always use at least two gripper guides so that even though there may be a slight warp or bend in the metal sheet, registration will be exactly correct.

An emergency control bar, which the operator may push with his leg or knee, will promptly stop the press. This safety stop is used only when he does not get the sheet into correct position against the side guides and gripper guides.

Nothing has been taken from the screen printing process through the use of mechanical presses. The same kind of silk and stencil are used,



Close-up of bed of press. Gripper guides are at lower edge of bed. Side guides are at the right (not visible here). The screen is above. View taken from in-feed end of the press.

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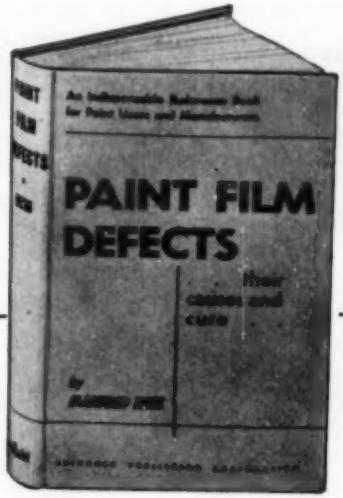

HERE ARE enumerated in this remarkably valuable book of 544 pages, all of the common and a variety of unusual and seldom heard-of defects and objectionable features that occur in paint, varnish, lacquer and synthetic enamel finishes; their probable, possible or real causes given; the effects described, and means of preventing and remedying these troubles fully outlined.

Chapters deal with these defects and troubles as they occur, 1) during or as a result of storage and preparation of materials before finishing; 2) when the materials are applied by various production methods and equipment; 3) during handling, processing or drying after application; and finally, 4) when and after the finished goods are shipped, displayed, stored or placed in service.

Defects covered include many more than could be named here, but to mention just a few there are: runs, sags, tackiness, films, too thin or too thick, slow drying, orange peel, alligatoring, wrinkling, pimples in films, pin holing, cracking, blistering, lifting, bleeding, blushing, blooming, discoloration, rainbow effects, gloss and dull areas, grained appearance, and scores of others.

Practical information is also revealed in reference to safety precautions to prevent fires or accidents in paint shops and finishing rooms, skin troubles of workmen, poison from paint materials and fumes.

By referring to the "subject Index" of 84 pages in back of the book, it is possible to locate quickly, the answer to any particular failure, cause or remedy.

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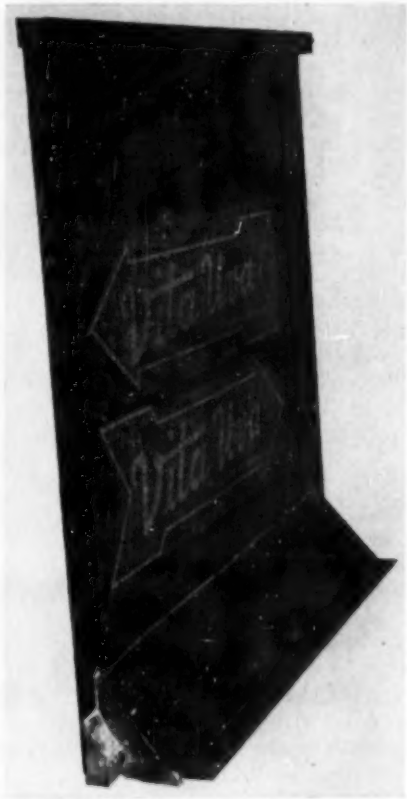

The silk screen frame with material reservoir along bottom edge. The reservoir has a slight radius so that the squeegee will pick up material (process paint) as it completes its half-turn into working position (that is with blade facing the silk screen.)

the same process material mixed to the same consistency, the same type of rubber squeegee with the same shape working edge that would be used in a hand operation. Use of the press simply increases production and provides a rhythm of motion that is not attainable by human hands.

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Dealers Have Finish Problems Too

ALL BUSINESSMEN know it is the sales force that makes their products move. The dealer's sales force is responsible for sales to the final customer. How many of you furniture manufacturers realize the importance of the man in your dealer's shipping room—that man who is responsible for taking care of all repair finishing, or that outside man who is making calls on complaints?

These are the men who are making your product "stick" after it is sold. This is no exaggeration. These men are actually your buffers, your trouble shooters, your salesmen—and they need help. Some manufacturers have done little or nothing to help these men who are so vitally important to them—and there is so much that could be done.

Think! Put yourself in their position or, better yet, look at your dealer setup as a whole and see the problems they have to face. Every kind of a finishing material must be coped with. Every color known to furniture must be matched. Any oversight or slighted work from the factory must be repaired. Hidden defects must be fixed to make the surface presentable.

Now think of the type of finish repair men that are available to the dealer. Yes, a few are fortunate enough to have experienced skillful repair finishers. Most of the stores have men who are willing, intelligent and potentially good finishers, but they don't know even the fundamentals of finishing or of finish repairing. They haven't the correct types of finishing materials available nor the right information needed to match colors for various pieces of furniture. [*Continued on page 70*]

You may toss this off with a laugh and say that it is the dealer's worry, but gentlemen, I say it is your worry too. A few of the large manufacturers have realized this and are doing something about it — something to help that finish man in the dealer's organization.

Here are a few of the things that should be done:

1) Promote the idea that furniture must be sold for what it is. (Don't expect the finish men to make a $39.50 table look like one that would sell for $149.50). This is a dealer responsibility.

2) Do everything in your power to educate the dealer's sales force on the merchandise to be sold so they can be honest in their customer dealings. Don't let the sales force promise a high gloss finish when a flat finishing material has been used; don't let them promise that distress marks will be removed from distressed finishes.

3) Send finishing material information to your dealers, or label your product so there can be no doubt about the type of finish used on it. The repair finisher needs this information.

4) Set up a standard repair procedure, using standard materials both in your factory and for your dealers, so the finish men will know what materials and what colors are required on any given finish. If you cannot do this then get someone to do it for you. This service is now available to all.

5) Send finishing information to your dealers regularly. You

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don't hesitate to send sales literature and promotion literature; why not some finish and repair literature? The boys will do a better job for you if they know what to do and what they are trying to repair.—*Herman Hardesty.*

New Power Brush Plant Being Built for P.P.G. Co.

An expansion of Pittsburgh Plate Glass Co.'s power-driven brush manufacturing facilities was started last month when ground was broken for a new plant in Baltimore, Md.

According to E. D. Peck, general manager of the firm's brush manufacturing division, the new plant will be a single story structure measuring approximately 193x125-ft. Provisions for future expansion to a two-story structure have been incorporated in the original design.

A manufacturer of power-driven metal and fibre brushes since 1931, Pittsburgh Plate during the past 30 years has utilized space in its adjoining paint and varnish brush producing factory for this operation.

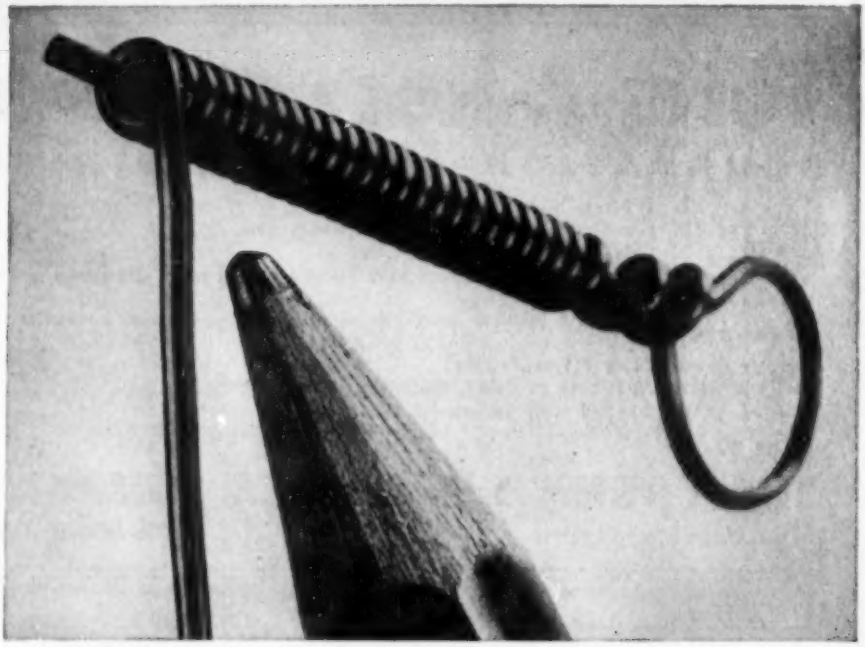
Hot Spray Exhibit at the Paint Industries Show

Eleven companies are cooperating in an exhibit of hot-spray lacquer techniques, equipment, and finished products at the Paint Industries Show in Atlantic City, Oct. 29 through Nov. 3. The display will be located in the Solarium of the Chalfonte-Haddon Hall hotel.

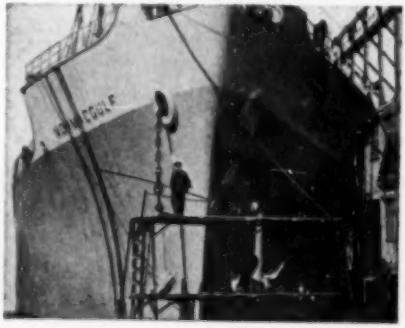
Visitors will learn about the many merits of hot-spray lacquer, the historical development of the process, and technical assistance offered to the industry by the sponsors of the exhibit. Heaters, spray-guns, and other equipment will be available for inspection, as well as typical items finished with hot-spray lacquer. Among the products on display will be military equipment, furniture, vacuum cleaners, venetian blinds, a piano, and a wall panel from a prefabricated house—all of which are finished with hot-spray lacquer for today's market.

Raw materials suppliers sponsoring the exhibit are: Carbide & Carbon Chemicals Corp., Commercial Solvents Corp., Hercules Powder Co., Publicker Industries, Inc., and Shell Chemical Corp.

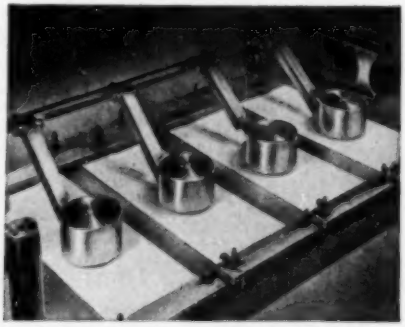
Equipment manufacturers, who are sponsors, are: Bede Products, Inc.; The De Vilbiss Co.; Dualheet, Inc.; Pol-Flo Paint Sprayer Co.; Reliable Products Mfg. Co., Inc.; and the Spee-Flo Co.



THIS MAGNIFIED COIL of copper wire demonstrates the unusual flexibility of Du Pont Nylon Wire Enamel which enables it to withstand the bending of wire around its own diameter without flaking or cracking. This remarkable insulating finish is being used on the wiring of motors and other equipment because of superior resistance to oils, solvents, and chemicals.



FIRST-CLASS FLEETS DESERVE FIRST-CLASS FINISHES. That's why Du Pont DULUX is the first choice of so many ship operators. Tough, durable DULUX is made right to keep its brilliant gloss and color despite salt air, hot sun, harbor gases and hard knocks. Day in, day out, DULUX yields this important bonus: *less frequent need for repainting!*



GLASS RUB-DOWN TESTS ABRASION-RESISTANCE of Du Pont's new DULUX finish for refrigerator interiors. Finished test panels are exposed to the constant friction of weighted glass discs. Results prove that DULUX outwears conventional coatings 483 to one! Moreover, DULUX stays white, resists chipping and cracking.

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Du Pont Nylon Wire Enamel—typical of the 12,000 Du Pont finish formulas working for industry today

• Keeping electricity on a straight and narrow path as it flows through the delicate magnet wire circuits of small motors and other electrical devices has always been a problem.

Many electrical manufacturers have greatly increased the efficiency of their products by using Du Pont Nylon Wire Enamel. One of many wire finishes recently developed by Du Pont, it provides an efficient, continuous coating of insulation with outstanding resistance to the harmful effects of abrasion, heat, oils, solvents and many chemicals.

Nylon Wire Enamel is an example of how Du Pont works to help solve the finishing needs of industry. What is *your* problem? If you are looking for a finish that will cut production costs, that will make your product look better, last longer, add new sales appeal . . . contact your Du Pont sales technician, or write E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Wilmington 98, Delaware.

SALES GO UP WHEN "DULUX" GOES ON as a certain manufacturer of metal shower cabinets has discovered. DULUX gives his product a hard, non-absorbent, highly alkali-resistant finish of outstanding durability. Its ultra-high gloss is easy to keep clean. It takes hard knocks without a sign of wear.

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The Theory and Practice of FINISHING FURNITURE

PART I

DID YOU EVER give much thought as to why wood furniture is finished at all? Any given piece of furniture may be subjected to a dozen or more separate finishing operations before it is ready to be placed in a shipping carton or crate. Let's look into some of the reasons for this expenditure of labor and materials. Four major reasons for finishing wood furniture are: 1) for decoration, 2) protection, 3) sanitation and 4) economic reasons.

The decorative functions of wood finishes are well understood. Wood is a friendly material, warm to the touch, and its true beauty can be presented most effectively through the wise use of suitable stains and surface coatings.

Furniture should be ornamental as well as utilitarian. That is why rare and beautiful woods are sought the world over for making fine furniture. The full beauty of the natural figure in these woods can be developed only by skillful finishing.

The more prosaic function of wood finishes — protection — must be well understood by furniture finishers if they are to realize the success their labors deserve. It is obvious that the best surface finishes help to protect wood from mild abrasion, chemical damage, staining, soiling and discoloration; but do you realize the role these finishes play in protecting the structural integrity of furniture?

Finish Protects Wood from Harmful Effects of Moisture

It is surprising that the most important protective effect of wood finishes is least understood. If a solid board, clamped securely so that it cannot expand in width, is saturated with water, tremendous

stresses are set up. Wood expands when it absorbs moisture. Lengthwise of the grain, this expansion is negligible, but it may be as much as 10% to 15% across the grain. Since the clamped-up board cannot expand in width, and yet the saturated cell walls have swollen, the result is deformation of the shape of the cells and pores. They become flattened so that the air space in the wood is somewhat less than before, at the fiber saturation point.

Now if the wet board is dried out in the clamps *the cells and pores will not regain their normal size and shape; they remain flattened.* Result: The board shrinks; it becomes narrower, when dry, than it was originally. In other words, it shrinks as usual in drying, but now the clamped width is the starting point or "green dimension". This process may be repeated many times, the board becoming narrower at each cycle.

This phenomenon has been called compression shrinkage. It explains why the handles of hammers and hatchets become loose when they get wet and finally dry out. No amount of wedging will prevent it. It also explains why tight wood kegs and barrels shrink some in circumference after they become wet and then dry out; then their hoops must be driven on tighter. Similarly, compression - shrinkage explains how nails and screws get loose in wood, indoors as well as out.

How Moisture and Humidity Damage Unfinished Furniture

Applied to furniture, if initial stresses produced by contact with water or by high humidity do not loosen the fastenings or glue joints, cracks will appear at the joints when the wood loses some of its excess moisture. In extreme cases the boards may split. Even well-made plywood, assembled with waterproof glue, may open at the joints although, in plywood, there is less danger of this than in all-solid construction. While no ordinary wood finish will exclude moisture indefinitely, any reliable finish will exclude liquid moisture and retard the entrance of water vapor (humidity) to the extent and degree required for most household furniture. [*Continued on page 76*]

This is the first of a series of authoritative articles that take up practical reasons for finishing wood furniture and explain details of various factory production systems—from the simple inexpensive jobs on up through medium priced and high grade types of finishing —to produce bleached, natural and color tinted blonds and various medium and dark neutral wood tones. It is a modernized revision of a series of articles previously published in *Industrial Finishing*.

By promoting dimensional stability and preventing or minimizing compression-shrinkage, furniture finishes serve to prolong the useful life of furniture.

Non-water-resistant glues will give much better service indoors when given protection from moisture—that is the degree of protection that most furniture finishes afford. This is why cassava flour and other non-waterproof vegetable glues formerly used so widely in furniture plywood gave fine service.

Cracking; Checking; Cupping; Warping

Compression-shrinkage also explains some of the other failures in unfinished wood furniture. It is responsible for cracking, some types of checking, cupping and warping. If you will wet a spot on a wide board and let it dry, fine cracks are quite likely to appear in the spot. If they do not appear after the first cycle, they will appear if the process is repeated several times. Each time the cracks become larger, and finally there is no way the damage can be repaired except by patching.

What happens is that the wet area in the board cannot expand; so it shrinks when it dries, causing fine cracks to appear. Prevention of this type of cracking and checking is an important function of finishes for furniture, especially furniture upon which water may be spilled occasionally.

Cupping results if one side of a board is wetted. Since the mass of wood and its fastenings prevent normal expansion, compression shrinkage causes the wetted side to become cupped when the water evaporates. Warping occurs in a similar manner. This working of the wood not only produces an unsightly appearance, but also tends to pull the fastenings loose.

For compression-shrinkage to occur the wood does not have to be actually moistened with water. Exposure to high humidity, which may occur in the average home, produces the same effect.

Finished Furniture Easy to Clean—and More Attractive

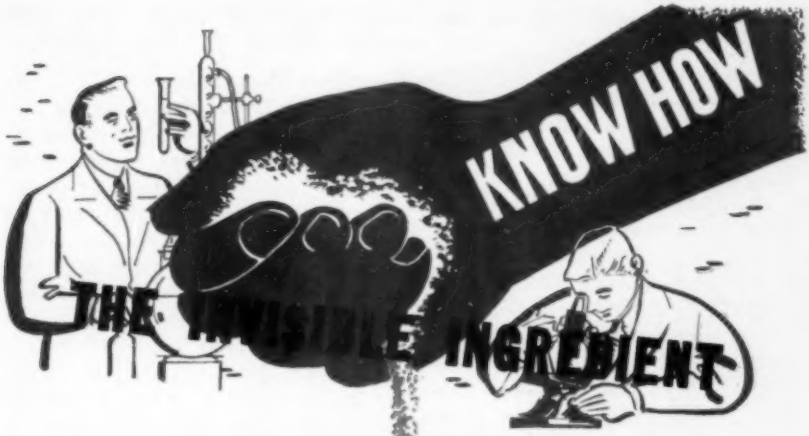
The third function of furniture finishes—sanitation and cleanliness—is well understood. Unfinished wood collects and holds dirt. Because of its porous nature, dirt, grease and bacteria become embedded in the wood and are difficult to dislodge. A well finished wood surface, on the other hand, is easy to clean.

The fourth reason for finishing furniture—the economic reason—is well understood by furniture manufacturers. The economic value and salability of a beautifully finished piece of furniture are increased far beyond the cost of finishing. Because furniture manufacturers realize such a profit on their finishing costs, practically all furniture is finished in the factory.

Clear Finishes Don't Hide Deep Scratches or Dents

Before going further, we must point out one thing that furniture finishes will not do, contrary to popular opinion. This limitation applies to clear finishes, with which practically all furniture is coated, and not so much to enamel (solid-hiding) or semi-hiding finishes.

(Continued on page 78)



A drum of finishing material, if it is to meet the exacting requirements specified for it, contains much more than can be seen, weighed or measured—it also contains that priceless ingredient "Know How," the imagination, resourcefulness and experience of the manufacturer.

Reliance finishing materials have this "Know How"—put there by reason of 30 years experience and continuing research into finishing problems.

This Reliance "extra" costs you nothing. It's the plus that is automatically included in every Reliance product.

No clear finish will hide or obscure surface defects or irregularities in the wood. Clear finishes are developed and used to emphasize the natural coloring and grain pattern in fine cabinet woods. By the same token, they will also emphasize any unsightly differences that may exist in texture (hard and soft bands as in Douglas fir), cross grain, sanding marks, dents, and other surface irregularities. This means *the wood must be carefully selected and then made perfectly smooth before it is finished.*

Coarse sanding marks and scratches may not be visible until after stain has been applied. Stain will penetrate deeply into the torn fibers and end grain along the sides of grooves made by coarse sandpaper, with the result that the beautiful wood pattern may be spoiled by a series of dark parallel lines. *Sanding strokes and the travel of sand belts should always be with the grain of the wood; never across it.* For the final belt sanding No. 4/0, 5/0 or 6/0 sandpaper should be used.

Wood fillers and sanding sealers are used to fill and smooth out unavoidable irregularities, such as natural pores in the wood, but even these materials have their limitations. When you consider that a furniture finish may be only 0.001 to 0.003-inch thick, the futility of attempting to fill scratches and dents with the finish is at once apparent. To attempt it by applying many coats, sanding between coats and rubbing the final coat, would be an unnecessarily long and expensive job. It is far more practical and economical to have the wood perfectly clean, dry and smooth before finishing begins.

How Dry Furniture Wood Should Be for Safety

When wood furniture is fabricated and finished the wood should have the same percentage of moisture content as it will be likely to have during normal service. The average moisture content of wood furniture in service is 6% to 8% on a dry weight basis, therefore the lumber should be dried to this degree of dryness before it is fabricated and finished. When furniture plywood is used particular attention should be given to the possibility of excessive moisture being introduced by the liquid glue. Any skilled cabinet maker knows how to handle this problem.

Too much moisture will result in shrinkage and cracking at the joints. Too little (a condition which rarely occurs) may also result in cracking and failure of the joints.

Effectiveness of Finish In Keeping Out Moisture

As the reader may have already inferred, the main fault of wood as a structural material is its property of changing in dimensions under varying moisture conditions, due to its hygroscopic nature. Moisture is the greatest single factor in the deterioration of wooden structures. It follows that the moisture-excluding effectiveness of a wood finish is one of the prime measuring sticks of its value. To express it another way, a prime function of a wood finish is to keep the moisture content of the wood as nearly constant and as evenly distributed as possible. [*To p. 80*]

AS MODERN AS TELEVISION

Gilbert Spruance finishes are kept as modern as television itself — through constant researching, testing and experimentation—in our modern, fully equipped laboratory.

If you have a television set the chances are that the cabinet was finished with Gilbert Spruance stains — fillers — undercoats and lacquers noted for quality, beauty and durability.

If there's a wood finish you wish you had — dreamed about — or just imagined — if there's one you want improved — changed or developed — we invite you to avail yourself of our experience and willingness to work on it for you.

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No ordinary finish will keep out moisture indefinitely; but on furniture, most finishes will keep out any spilled or splashed water until it evaporates or is wiped off, and the finish will retard entrance or loss of moisture vapor enough to level out the fluctuations in moisture content (and dimensions) to a significant degree. It comes as a surprise to many that a sheet of celluloid 0.005-inch thick is inferior in moisture-excluding effectiveness to most furniture finishes of equal or less thickness.

Applied to furniture, there are three factors that determine the moisture-excluding effectiveness of a given finishing system.

The formulation of finishing materials is a factor that has been and is being studied constantly by manufacturers, and the results are embodied in their products. Furniture manufacturers can exercise control over this factor only by selecting those materials which they believe are best suited to their respective requirements.

Minimum Number of Coats; Minimum Thickness of Film

At least two coats of any surface-type material are needed to give a finish worthy of the name. Filling or saturating the surface layers of the wood is not adequate, because the "wicking" action of exposed wood fibers will draw moisture into the wood. On furniture, for example, tests have shown that at least 0.001-inch film thickness (after rubbing) is required for adequate protection. Actual dry film thickness, and not the number of coats, is the important factor. In the present state of the art and technology of wood finishing, *this means a coat of sealer and at least one top coat.* Two or even three top coats are better, but beyond this point the rate of increase of moisture-excluding effectiveness falls off rapidly.

What Surfaces to Coat to Keep Out Excess Moisture

Whenever possible, all surfaces should be coated. Any surface through which moisture can gain access should be coated. This is of prime importance in the case of water, and of secondary importance in the case of moisture vapor. In furniture, only the exposed surfaces are likely to be exposed to water, therefore these surfaces are always finished.

In regard to exposure to high humidity, the principle is sound in theory, but in practice some compromises must be made. The general practice is to finish only the outside surfaces for reasons of economy and practicability. This compromise also has some sound theoretical basis because all organic coatings are far more effective barriers to short exposure to water than several days of exposure to moisture-laden air (high humidity). However, regardless of the economy of the practice, where exposure conditions are extreme it is better to finish all surfaces, because then the moisture content of the wood can be kept more nearly constant and more evenly distributed. Internal stresses are thereby reduced so that the life and utility of the structure are increased.

A cold-crack test, when properly conducted and interpreted, is a valuable means of evaluating the

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comparative life of two different furniture finishing systems. There is a serious need for correlating the moisture-excluding effectiveness of furniture finishes with this test, as it is at present conducted. Further, the various techniques and substrates used in making the test need to be more carefully refined and standardized.

As it is conducted today, the cold-crack test has no value whatever in establishing an absolute numerical value for a given material; *it is good only for comparison purposes.* For example, under concurrent and identical conditions, a lacquer may fail in four or five cycles on 5-ply, ¼-inch mahogany face panels, and run 25 or more cycles on a solid maple panel of the same dimensions. Further, no matter how carefully the test is run nor how carefully the conditions are controlled, the same lacquer on two identical panels may vary as much as 100% or even more in the numerical results obtained.

On-the-Surface Finishes Versus Penetrating Finishes

Usually, in finishing furniture—after staining and filling—every effort is made to prevent penetration of sealers and top coats, so as to produce a film of maximum thickness with a minimum number of coats. While this practice does produce films that effectively exclude moisture, such films are susceptible to scratching, marring, and other mechanical damage.

On the other hand, *finishes that lie almost entirely within the top layers of wood have wonderful resistance to mechanical wear, but have poor moisture excluding effectiveness.* In practice, the film above the wood surface should be thick enough to permit rubbing and to exclude moisture, but it should have as much toughness and mar-resistance as possible. It seems that the ideal furniture system should have both penetrating and sealing properties.

Some Penetration Needed for Toughness and Adhesion

Lacquer sealer is often recognized as the weak link in most wood finishing systems. Because the material is designed to lie on the surface (for quick drying) and to be sanded (sanding agents) it reduces the toughness and mar-resistance of the finish. By making the sealer slower drying, so as to permit better penetration at a sacrifice of fullness or sealing properties, better toughness is obtained.

Wood filler is often considered the weak link in a furniture finishing system. Because the filler is so effective in preventing penetration of the sealer and other topcoats, it renders the finish more susceptible to mechanical damage.

Every finisher knows that maximum toughness and adhesion can be obtained by leaving off the sealer and applying the top coats directly over the filler or stain, with a consequent sacrifice in fullness. The finish will be still tougher if the filler is also left out. Materials used for top coats penetrate the wood and are more firmly keyed into its surface.

Probably the most satisfactory compromise is to permit some penetration by one of several means. For example, if a sealer must be used, select and use one of low

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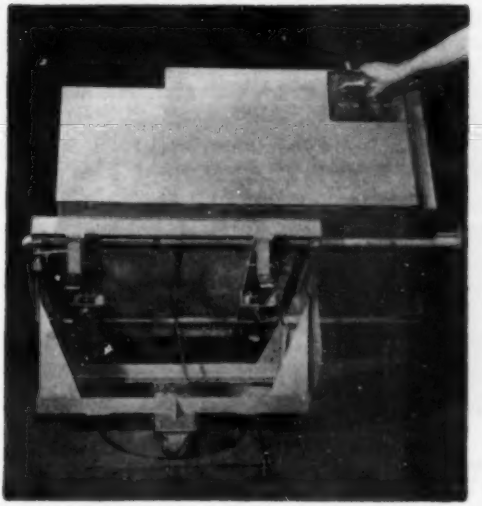

The versatile HRJ Rota-Tilt Table tilted for sanding or rubbing the end of chest . . . the pedal does it. Note how clamps drop down while end is being finished.

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solids (10% to 15%), one that is slow drying, slow setting and slow sanding. Selection of fillers (by trial) that give best toughness (regardless of hold-out) is another practical procedure. Solvent penetration will usually key together the top coats, especially if they are lacquers.

Urea-alkyd top coats that have been fully cured by heat and then recoated — these tend to have a "shelving action"; in other words poor adhesion between coats. Only partial curing of the first coat will remedy the trouble. Likewise, ordinary air-drying varnishes that have dried several days or more before recoating may show the same trouble unless the surface is well sanded. It is not the general practice to sand between lacquer or varnish coats in production work; only the sealer coat is sanded. If the furniture manufacturer desires to get a tougher finish, and is willing to put on an extra coat to do it, then by promoting penetration of the first coat, or the coats over the filler or stain, he can easily do it.

Editor's Note: Part II of this article, to appear next month, takes up Bleaching and Staining.

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Technique of Tumbling

SUCCESSFUL TUMBLE finishing of small wood turnings calls for the use of more thin coats of finishing material and what you might call a leisurely tumbling speed. This is to be especially emphasized when you are striving to produce a smooth lustrous finish in white or in any very light colors. The viscosity of materials must be just right.

It is difficult if not impossible to put down on paper exact directions for producing satisfactory results by tumbling. This technique can only be learned slowly by long experience, and that experience will include much experimenting and many failures.

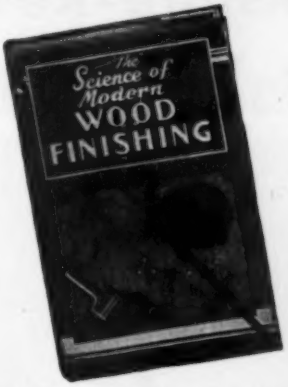
Glidden's Merchandising Mgr. Paint & Varnish Division

Paul W. Neidhardt of Meldrum & Fewsmith, Inc., Cleveland advertising agency, has been appointed merchandising manager of the paint & varnish division of the Glidden Co., Cleveland, Ohio. Mr. Neidhardt will be responsible for the over-all supervision of advertising and sales promotion activities in coordination with all sales efforts of the div'n.

He has been with Meldrum & Fewsmith since January, 1946, where he was ass't account executive serving the Glidden Co.

Warm Air Make-up for Spray Booths

A new development is announced which provides adequate clean warm make-up air for entering spray booths and a suitable draft for removing all contaminated air from spray booths to assure, at all times and under all conditions, clean spray work, safety and operator comfort. For complete information on this new setup, write or telephone Burdett Mfg. Co., 3433 W. Madison St., Chicago 24, Illinois.



NEW! NEW! NEW!

Here is an informative and authoritative reference book of 386 pages that reveals the details of modern production finishing of furniture and other wood products. The author is G. L. Denlston, B.S. (Chemical Engineering), Director of Industrial Finishes Division of Commonwealth Engineering Co.

SUBJECTS COVERED BY CHAPTERS

1. Cabinet, furniture and other woods
2. Glues and gluing
3. Sanding
4. Bleaches and bleaching
5. Staining materials and methods
6. Aniline dyes for Cbadeloid NGR stains
7. Organic solvents
8. Fillers and filling
9. Sealing the surface
10. Patching up practice
11. Finishing with varnish
12. Lacquers, synthetics and application
13. Rubbing and polishing
14. Novelty finishes
15. Decorative techniques
16. Finishing schedules
17. Good finishing practices
18. Repairing and refinishing
19. Glossary of terms

Contains 18 chapters, with interesting illustrations. Information in "The Science of Modern Wood Finishing" is based on the latest materials, equipment, supplies and methods used in modern factories today. Many articles published in INDUSTRIAL FINISHING Magazine are referred to in the bibliography.

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Moisture-Resistant Finishes For Wood Products

Fig. 1—A pair of shoe lasts coated with one of the materials developed; then exposed to 15% to 20% relative humidity at a heat of 105° to 110° F. under forced draft conditions for one week. Notice that heel plate edges are slightly inside the wood line.

Fig. 2—The same lasts as shown in Fig. 1 after one week of exposure to severe drying action. Note that the heel-plate edges are still inside the wood line.

Laboratory developed, service tested finishes for maple shoe lasts—and Navy float signals.

WOOD HAS ALWAYS been the material used for shoe lasts. In this country hard maple is the species commonly used. Other woods such as beech, birch, persimmon and gum have been tried with varying degrees of success, but the industry still prefers maple primarily because of the wood's hardness, fine grain, uniform texture and good dimensional stability.

In spite of its "good" dimensional stability, maple lasts have long presented an annoying problem to shoe manufacturers. How this difficulty has been overcome by the development and use of certain new moisture resistant coatings may be of interest and value to manufacturers of other wood products.

From the time a shoe last enters the shoe factory, it is exposed to a succession of punishments that few wood products experience. It is pounded in heavy machines, nails are driven into it, steamed leather is wrapped around it, the toe end

By J. L. STEARNS, Timber Engineering Co., Research Laboratory

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• IN STEP WITH THE TIMES •

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CHICAGO 14

Typical shoe lasts made of hard maple.

is exposed to a chemical called "box toe softener" and it is heated in a drying oven.

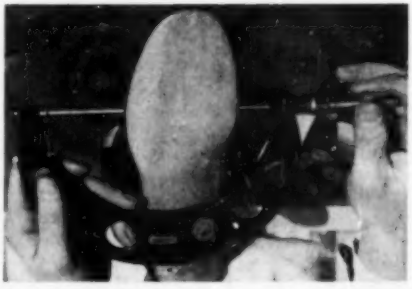
After surviving all of this abuse, plus the machinery impacts in the factory, the completed shoe is taken off and the last is thrown into a chute where it smashes down to the floor below on top of other shoe lasts in a rough collection box. After about 100 to 150 round trips like this, the last goes to the repair department or is relegated to a junk pile.

Width Swelling Changed Size of Shoe Lasts

The principal difficulty encountered by shoe manufacturers is not the mechanical punishment so much as the swelling and shrinking in the width of the last. Wood does not shrink and swell longitudinally more than about 1% to 2%, but the width and thickness (radial and tangential) movement may be as much as 4% to 8%; hence the size of the shoe, by number, remains stable, but the actual width may vary as much as a full letter. It is not difficult to understand, therefore, why one pair of shoes marked "size 9-B" may feel tight to the wearer while another pair with the same marking may feel loose. The other pair may be actually as wide as a 9-C, due to the swelling of the wood in the last.

This trouble has been overcome, thanks to a remarkable new moisture repellant finish which is applied by the last makers. There are actually two materials, but they are handled similarly and one is as effective as the other. One is an acid-catalyzed phenolic varnish and the other an urea-alkyd varnish. Both are polymerized at temperatures of 130° to 150° F. in one to three hours. Some last factories spray the finish while others use a dip system. It is a 2-coat finish, with glossy, unrubbed surface. The material is a light amber color and makes an attractive transparent finish over the maple wood.

The Last Manufacturers Association of Boston, Mass., engaged the Timber Engineering Co. Research Laboratory to develop this improved finishing system and it has since been adopted generally



Accurate micrometer measurements are made to determine the efficiency of coatings for protecting hardwood shoe lasts against swelling after long exposure to moisture.

What Price Wrong Finish?

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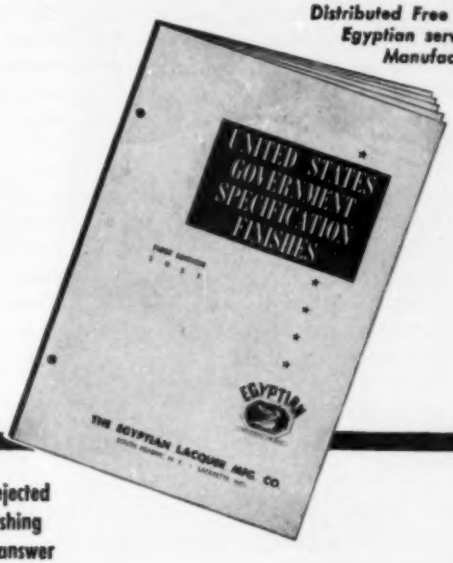

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by the last industry. It is also specified by the Quatermaster Corps for current purchases of Army shoe lasts.

Navy Float Signals Are Partly Wood

There are two general types of wood-bodied dispensible signals used by the Navy. They are purchased by the millions and are used for a variety of purposes. For instance, when it is necessary to light up an enemy target, such as a vessel, island or coastal gun battery, etc., planes are sent over the target to drop float lights. These wood-

A wood-bodied Navy float signal, finished.

bodied devices are filled with a certain powder which burns with an exceedingly bright light, and the target is plainly visible to the gun crews. Other floats are used to mark the location of military 'plane survivors who had bailed out at sea.

The floats used in the early part of the war were made of sugar pine and Sitka spruce, finished with one coat of ordinary gray house paint.

It was necessary to store these floats under conditions of high humidity in the tropics and thereafter trouble often developed in the ignition systems. The dampness would get the powder wet and many duds were reported.

The Navy called upon the float signal manufacturers to do something to correct this trouble. The development of a moisture proof coating was necessary. The outcome, following exhaustive tests, was a special aluminum varnish dip coat, made by mixing 2-lbs. of 160-mesh aluminum powder in one gallon of a 25 length phenolic spar varnish. Three coats were applied and the test results gave a moisture retarding efficiency of 91.6% following 14 days exposure to 97% relative humidity at 140° F. The Navy approved the finish described and subsequently specified it on all float signals.

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Robert B. Goodsell Represents Enthone in Middlewest

Robert B. Goodsell has been appointed sales and service representative for Enthone, Inc., of New Haven, Conn., in the middlewest. His address is c/o Ardco, Inc., 6665 S. Nashville Ave., Chicago, Illinois. Mr. Goodsell is widely known for his activity in the American Electroplater's Society. He has spent 24 years in the field of electroplating and metal finishing. His technical education was obtained in in Wisconsin.

Mr. Goodsell will act as technical service representative and consultant for all of Enthone's products including those for coloring and blackening of metals, stripping of enamels and metal coatings, plating upon aluminum and general products pertaining to cleaning and pickling.

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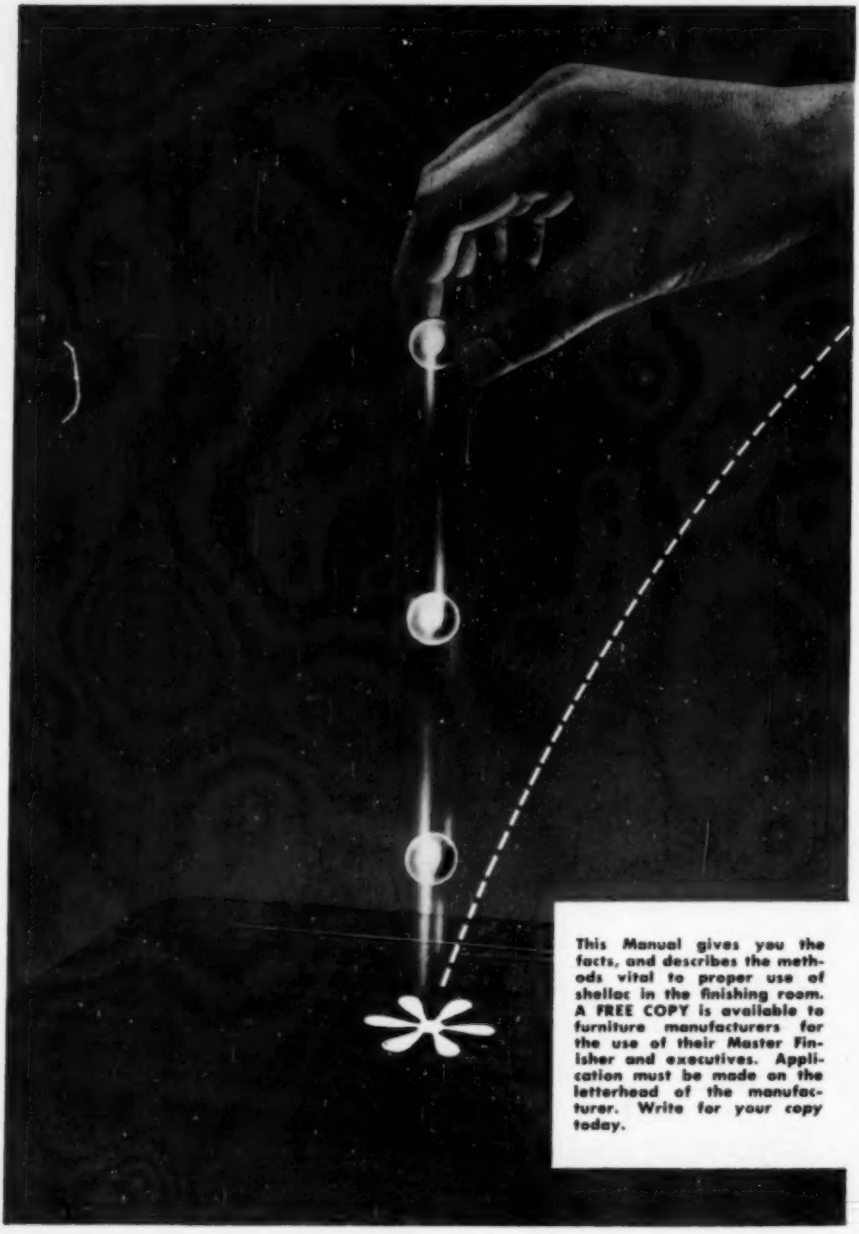
This Manual gives you the facts, and describes the methods vital to proper use of shellac in the finishing room. A FREE COPY is available to furniture manufacturers for the use of their Master Finisher and executives. Application must be made on the letterhead of the manufacturer. Write for your copy today.

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The finished panels were then subjected, in the laboratory, to impact tests which consisted of dropping polished steel balls on their surfaces from a given height—sufficient to cause eventual failure of the finishes. Results *proved conclusively* that finishes incorporating shellac as an undercoat were *much more resistant to impact* than those using the various other undercoating materials tested.

Yes, shellac not only imparts that "rich" look which wins customer preference, but it assures *complete consumer satisfaction* by helping furniture to "stay on the job" . . . give service that results in repeat orders instead of complaints!

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of The American Bleached Shellac Manufacturers Association, Inc., 65 Pine Street, New York 5, N. Y.

Squeegee Equipment

We have a customer interested in applying finishes by the squeegee method. Can you please advise us of any company manufacturing and engineering squeegee apparatus? The squeegee equipment must be capable of applying a film to tubes varying in length from 6 to 12-ft.—*A. A. Co.*

We regret to admit that we do not have such information on file. We have published a few articles on finishing broom handles by this method, but in all cases the equipment was "home made". After all, it is rather simple, consisting chiefly of a rubber washer properly reinforced and held in position.—*Editor.*

Laminated Aluminum Finish for Nickel Chrome

In August issue of *Industrial Finishing* we read an article by W. A. Bartski of the Udylite Corporation on "Laminated Aluminum Finish", as a replacement for Nickel-chrome.

As you will note from our letterhead, we are manufacturers of airplane seats for many of the leading airframe manufacturers. We have been using an anodized aluminum finish on several of our parts, such as ash trays, scuff plates, etc., and have been having some difficulty in obtaining a uniformly satisfactory finish.

We have been toying with the idea of replacing the anodized aluminum with a baked enamel satin finish aluminum of some sort. Your article seems to offer a possible solution to our problem.

Can you advise us, or have the Udylite Corporation advise us, if the treatment described in the articles mentioned is available anywhere in the Los Angeles metropolitan area? While we have our own spray booths we are, at present, so swamped with work that we would prefer to subcontract our parts to an outside source with the proper type of equipment and in sufficient quantities as to make an economical operation for all concerned.—*O. & N. Co.*

The Parker-Wolverine Division of Udylite Corp. is located at 2501 E. Grand Blvd., Detroit 11, Mich. and, according to our directory, Udylite is at 1653 on the same street. Branches are in Chicago and Cleveland.—*Ed.*

Flock Goes on Electrostatically

On page 84 of August 1951 issue we notice that C. R. Co. asks about an electrostatic application for flock, and we read your reply regarding Vertipile and the Behr-Manning process.

We are sending you a booklet on Flisca Electrostat on which we have the rights for United States, Canada and Mexico and which doesn't conflict with the Behr-Manning process.

This method of application is primarily for flocking irregular shaped objects, greeting cards, crests, emblems, etc., and can be mechanized for high production of unit objects. It is not necessarily intended to do overall flocking on fabric such as is being done by Vertipile. Perhaps your

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inquirer might be interested in this process, unless he's interested in the overall coating of fabric with flock.

If you will give us the name of this inquirer and his address we would be pleased to write him and send him a copy of our booklet.—*International Industrial Developers, Inc.*

Tumbling; Dip Whirl

We wish to coat small cylinders by using a lacquer in a tumbling process. We would like to know the names of manufacturers of tumbling barrels who can advise us about the method of application and furnish the equipment required.

We are also interested in the centrifugal whirling process, as our production will run into millions of pieces and must be sold at a price range of $4.00 to $5.00 per thousand units.—*A. Novelty Co.*

In a letter we are submitting names and addresses of manufacturers of tumbling machines; also, machines for dip-whirling.—*Editor.*

"Hammertone" is a Registered Trade Name

We are interested in an article which appeared in August 1951 issue of *Industrial Finishing* by Howard E. Jackson, entitled "Hammertone Finishing at Iron Fireman". As you probably know, the word "Hammertone" is our registered trade name describing our Hammered Effect Finishes . . .—*Maas & Waldstein Co.*

Fire in Spray Booths

We are interested in the prevention of fire in our spray booths and in those of our customers, and are writing to learn if you have available any literature or reprints of articles on the care and safeguarding of these booths. If so, we will greatly appreciate your mailing them to us at your earliest convenience, billing us for any charges that may accrue.—*D.G.Co.*

We have published several articles on this subject and are sending you what we have available. You might also write Walter Kidde & Co., Belleville, N. J., and National Fire Protection Ass'n., 60 Batterymarch St., Boston, Mass.—*Editor.*

Air Dry Wrinkle Wanted

I have a customer who finishes safes and this concern is in need of a synthetic enamel that will produce an air dry wrinkle finish. Do you know of any manufacturer, either west or east, who makes such a finish? This could also be a lacquer. Would appreciate a prompt reply.—*J. H. N.*

We provide a black air dry Rufkast as a stock item and are equipped to make other colors of this material to the specification of customers. When making special colors an order of at least 50 gallons is required. This material is applied directly to the metal used and does not require a prime coat under it.—*Berry Bros.*

Roller Coating "Coils"

We are interested in roller coating strip (or coil) steel stock. We have just seen a plant in which Venetian blind stock is being coated. There, of course, both sides are coated at once, the stock being pulled through the coater by the power-driven wind-up mechanism. The coater itself has no drive.

We will be coating only the one side at a time as in normal coating of

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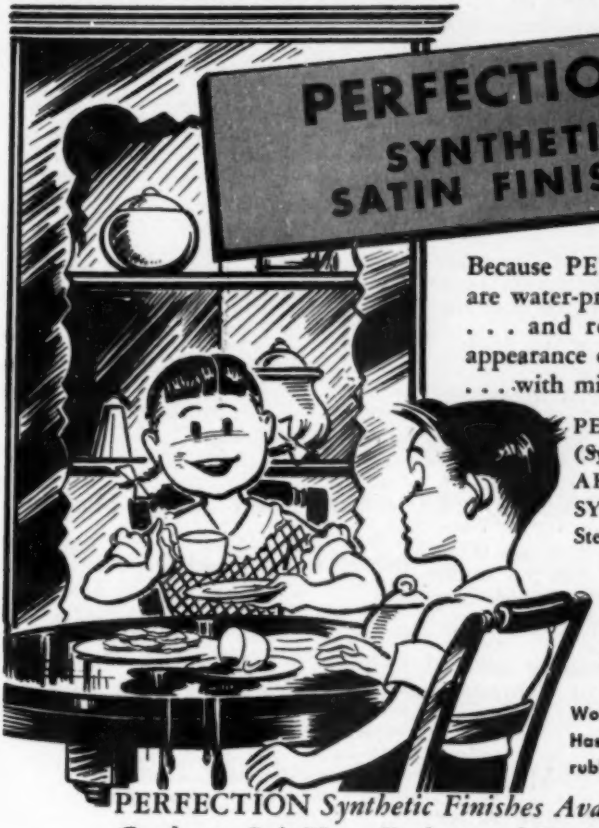
WHEN FURNITURE IS FINISHED WITH



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WATER-PROOF LIQUOR-PROOF

sheet stock. There the coater has power-driven rolls, and a scraper to keep the coating from getting on the back side. If we were to coat coil stock on such a coater, the wind-up drive, obviously, would have to be perfectly synchronized with the drive on the coater. We understand this is done quite commonly.

We are interested in seeing such a method. If you know of anyone in our vicinity (Rochester, N. Y.), who is doing such work, we would greatly appreciate getting their respective addresses so we could arrange to visit them.—*H. P. R.*

We are not sure which concerns have such setups in operation. In a letter we are suggesting who might tell you.—*Editor.*

Fluorescent Effects

We have noticed recently a few paints used mainly for sign purposes which have a fluorescent effect. We are interested in buying a spray type clear lacquer, either air-dry or baking, which would incorporate this fluorescent effect. Can you put us in touch with a manufacturer who can fill this requirement?—*G. & S.*

In a letter we are naming two or three manufacturers of fluorescent paints.—*Editor.*

Yes, We Have "Plextone"

In August 1951 issue, page 86, we notice in "Letters from Readers" that "C Mfg. Co." is seeking information regarding "Plextone". While we have never ran an advertisement for Plextone we have had, as you indicated in your reply, editorial comments in your publication.

Would you be good enough to send us the name of the company requesting more information about our unusual multi-colored enamel so that we may follow them up directly and avoid any unnecessary delay in providing the desired information?—*Maas & Waldstein Co.*

Information given.—*Editor.*

Sandblast Stripping

We notice a reference in August 1951 issue (pages 80 and 82) to an article published in June 1951 issue (page 84) where some one is seeking information on sandblast equipment for the removal of old finishes preparatory to refinishing. We are also interested in this and would appreciate any available information that you may have.—*H. B. & B.*

We are pleased to refer you to a concern right in your own city . . . . Pruden Tool Co., Inc., 310 W. 68th St., New York 23, N. Y.—*Editor.*

Non-Shrink Shellac Sticks

In a recent issue of your magazine there was an advertisement by a firm that manufactured lacquer and shellack sticks which they guaranteed would not raise under lacquer when doing a burning-in job. Would you please send me, by return mail, the name and address of the manufacturer of these sticks?—*M.P.*

Information sent.—*Editor.*

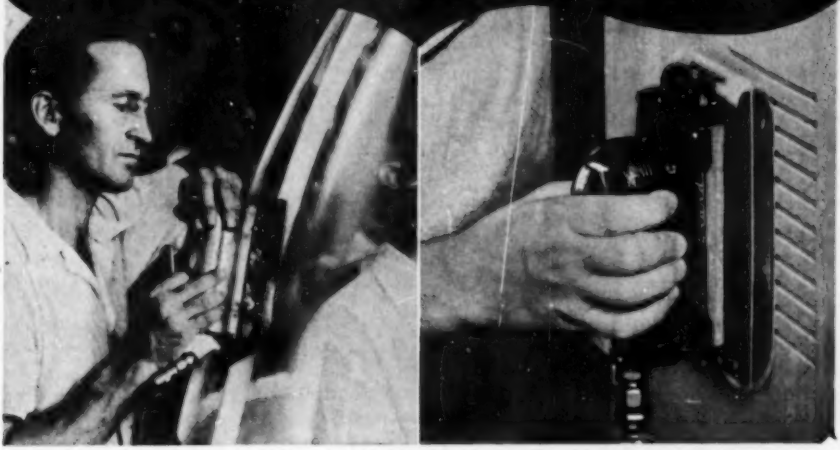
Wire Coating Job

We have read the article in Aug. 1951 issue of *Industrial Finishing* on "Roller Coating" with great interest.

During the normal course of our business we use a considerable quantity of steel wire, .020 to .060 in dimensions and coating is a considerable problem. [*Continued on page 100*]

Whatever your sanding problem

...on wood, metal, plastic



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We would appreciate your sending us the name of the firms building the equipment you described, so that we can write them and obtain more information on this process.

We thank you for your cooperation and congratulate you on bringing these new developments to the attention of your readers.—*R. O. Co.*

In a letter we are naming manufacturers of roller coating machines; also a concern in Cleveland, Ohio, that specializes in wire-coating machines, etc.—*Editor.*

Roller Coating Machines

In August 1951 issue, we read with interest your article on Roller Coating Machines. Would you kindly give us the names and addresses of firms who manufacture these machines?—*E. Inc.*

We, also . . . .—*M. B. & S. Co.*

Information furnished.—*Editor.*

"What the..? How the..? Where the..?"

More About Electrostatic

Mr. P. C. Bardin: We would appreciate your sending us a copy of the four chapters on electrostatic painting written by yourself. We believe that this would be a tremendous aid in formulating our future plans for using this type of painting on the production of steel kitchen cabinet parts.—*P. Mfg. Co.*

We are sending you copies of March, April, May and June issues of *Industrial Finishing* Magazine which contain the four chapters of Mr. P. C. Bardin's illustrated article entitled, "Automatic Spray Painting".

When you look into this series of articles, you will notice that only the final Chapter 4 deals with electrostatic spraying. However, we feel sure that the other chapters will be of interest and value to you. See also August 1951 issue, pages 94, 96 and 97.—*Editor.*

Rustproofing Oils

We are interested in obtaining all the information possible regarding oils that can be used for rustproofing steel and cast iron for a long period of time. Our machinery around the furnace operations has been rusting badly and where tolerances have to be maintained, painting is unsatisfactory. There is a need for two types of rustproofing oil:

1) An oil that will withstand normal atmospheric conditions in the Southern California area, and . . . .

2) An oil that is reasonably safe from chemicals and can resist a temperature of 140° F. Chlorine is the basic chemical used in melting our aluminum.—*H. D. Corp.*

Suggestions given by letter.—*Ed.*

Your Excess Inventory

TANGIBLE savings may be effected by a thorough check and careful study of excess inventory. Man is much like the squirrel in that he hoards things and eventually buries them "for the time being". At inventory time some of these supplies are listed as "lots"; others, which never have been touched since the last inventory, are listed as so many pieces or so many pounds of parts or items. This situation could go on indefinitely unless someone in authority makes a decision—to use the material as is, convert it to some useful purpose, to sell it or to junk it.

Excess inventory represents money invested which is dormant. Also it takes up valuable storage space that could be used for needed raw materials, work in process or finished work.

Let Conveyors Do It

CONVEYORS are cheaper. It is seldom economical to move products through the plant manually. There is a type of conveyor suited to nearly any product from a child's rubber toy to an automobile body weighing several hundred pounds.

A scale manufacturer used to spray paint on scale cases, one at a time, handling each scale case from a truck, moving it into and out of the spray booth. A spray operator and two helpers did the work. Afterward the loaded trucks were pushed into a batch type oven where the finish was baked.

Eventually this manufacturer saw the light. He installed a vertical spindle type conveyor about 60-ft. long. Now one workman loads; the spray operator applies enamel as the spindles mechanically revolve scale cases inside the spray booth.

The finish is baked in a short infra-red electric oven and one worker, wearing gloves, transfers scale cases to a moving belt where they cool as they travel to the assemblers. These conveyors soon paid for themselves in increased production.—J.O.

New-Type Laboratory Service

A new laboratory for testing the pumping and spraying qualities of such materials as coatings, adhesives, sealers and greases, has been opened by Gray Company, Inc., in Philadelphia. The company, with plant and main office in Minneapolis, manufactures material-handling pumps, lubricating equipment and other products. Another testing laboratory is maintained in Minneapolis, and a third will be opened in Atlanta in January, 1952.

Purpose of the laboratory is to furnish highly specialized data on pumpability and sprayability, to manufacturers and users of fluids and semi-fluids, and to refiners of petroleum products. Companies located in the New England, Middle Atlantic, South Atlantic, and East South Central states are invited to submit samples for free testing.

Facilities of the laboratory are available to any company in the above sections of the country. A description of the material, its use, and its present method of handling an application should be included. Address your request to: Gray Company, Inc., Testing Laboratory, 2124 Fairmount Ave., Philadelphia 30, Penna.

Tests are made to determine pumpability and sprayability of various materials submitted.

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Platinum Walnut Trouble

In the Question and Answer section of August 1951 issue we read of the experience of "B. G. Co." with platinum walnut discoloration. It occurs to us that "B. G. Co." might be interested to know that we have a bleaching sealer that can be put over the white wood filler and which will prevent discoloration.

In the case outlined, we would recommend, after sanding the walnut veneer, an application of bleaching sealer; then put on the white wood filler and follow with another application of bleaching lacquer. Then finish with an application of water white lacquer. This procedure will clear up the trouble. — *Industrial Finishing Products, Inc.*

Adhering Stencils to Silk Screen

Referring to H. E. H.'s question, as published in September issue, page 102, if the silk has been stretched, wash it thoroughly with lacquer thinner or adhering liquid, drying the silk thoroughly. Then, when adhering the film to the silk, be sure it is built up and in tight contact with the silk.

A cloth fairly well saturated with adhering liquid is held in the left hand and a dry cloth in the right hand. The cloth with the solution of adhering liquid is rubbed on a small portion of the film and immediately dried with a dry cloth. Only one swipe of the cloth with the adhering liquid is required, as more than one motion will leave too much of the thinner on the film, causing it to dissolve, resulting in a rough edge and a burning of the film. Then too, it is important to have the proper adhering liquid for the type of film being adhered.—*Bert Zahn, Manager Graphic Arts & Sign Finishes Division, The Glidden Co.*

Finishing Gunstocks

In the August 1951 issue, pages 88 and 90, I noticed a reply to an inquiry on the subject of gunstock finishing.

Firearms and ammunition are a hobby of mine and I have quite a collection, together with books on the subject. If the following will be helpful, I am happy to have passed it on. There is a complete book, issued in 1949, on this subject and possibly your correspondent would appreciate knowing about it, if he does not already have information thereon. The book is titled, "Gun Stock Finishing and Care", and is written by A. Donald Newell. It was published by Small Arms Technical Publishing Co., Georgetown, South Carolina.

I do not recall the present price

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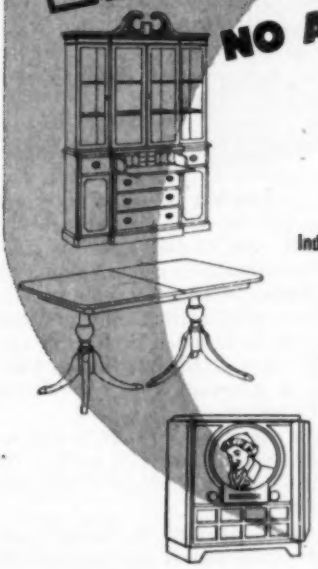

Here's a remarkable furniture and cabinet lacquer that imparts a rich, smooth rubbed effect on any type of wood, yet requires no agitation or hand rubbing!

Because of an exclusive manufacturing process, the flatting agent in BARRETT'S WONDERFLAT stays in suspension indefinitely, even under wide extremes of temperature. This not only eliminates the costly and time-consuming step of agitation but insures complete uniformity of results — each piece takes the same rich depth and satin texture regardless of time interval between jobs.

***TRY IT YOURSELF!** You are invited to write on your company letterhead for prices and a free sample of WONDERFLAT. See for yourself how WONDERFLAT can cut finishing costs and speed production for you!

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but believe it is around $5.00 per copy. It is available direct from the publisher or from Mr. A. Ray Riling, of Philadelphia, Penna., who specializes in books on arms and ammunition.—*H. E. Stier, Supt., Du-Lite Screen Co., Inc.*

Mahogany TV Cabinets; Finish Trouble

We have trouble in getting a high gloss finish on television cabinets with various lacquers and will appreciate any help you can give us.

The main trouble is in the orange peel effect that shows up as soon as the cabinets are polished to a high gloss. So far, even the lacquer manufacturers have been unable to solve the problem.

Our cabinets are of mahogany veneer. We have checked all operations for possible sources of trouble. Sanding, staining, filling and lacquer coats seem to be applied on a good schedule. Lacquer flow has been checked but the orange peel still shows up. Spray technique also appears to be okay.

The lacquer has been applied at variations of from 55 to 70-lbs. pressure, with little improvement in results. We have an electric pumping unit on order to replace the present gravity feed, in the hope that it will help.

Our cabinets are rubbed with S—— portable sanders and look good when kept at a satin finish. However, as soon as the high polish is applied, a rough orange peel appearance shows up. It is worse on the sides, which are sprayed vertical, than on the tops.

Sanding is done by hand after the sealer coat, and then three coats of 27% solids gloss lacquer are applied before the final machine sanding and polishing. . . .—*B.A.Co.*

Since you do not give your exact finishing schedule, it is difficult to determine just what is causing your trouble. To be able to accurately diagnose it, one should have the following information: The type of stain, whether NGR; drying time following each application, and whether the finish is force dried by heat or air dried. If force dried, how much flow-out time is allowed before furniture enters the hot oven.

Perhaps the rough orange peel condition that you describe is caused by one of three things, which I will list as follows:

1) A small amount of orange peel in either your sealer or any single lacquer coat—one that would be hardly noticeable to the naked eye—will be magnified by the three coats of 27% solids lacquer which you apply. Articles in January and April issues of INDUSTRIAL FINISHING explain the cause of orange peel and what to do to eliminate it from finishing materials. Perhaps your material is "too fast" and sets before it has time to

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Applied by spray, for either air-dry or bake, United's Olive Green is perfect for filing cabinets, tanks, trucks, bombs, desks, lamps—any product, military or civilian, finished in green.

Olive Green is but one of a complete array of United colors and bases made up to meet and exceed every specification.

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flow out smoothly, if air dried; or, if dried by heat, your TV cabinets may enter the hot oven too soon after the lacquer has been sprayed and before it has had time to flow out to a smooth level surface.

Soft Film Under Casehardened Top Coat

2) Your trouble could be caused by shrinkage of the finish after rubbing. This condition is often mistaken for orange peel because its rough uneven appearance closely resembles orange peel. Since you say that the condition is not noticeable until the finish is brought to a high polish, this could be your trouble.

Shrinkage is caused usually from not allowing enough drying time following each application of material. When a heavy film is built up too hurriedly the materials do not have time to dry properly all the way through. When finished, the material will be dry on top but you will have a soft film under the top coat. When the piece of furniture is rubbed, the "case hardened" top film is rubbed off, leaving a soft doughy-like film which, when a high speed buffing wheel is applied to produce a high polished finish, will cause the finish to rough up and shrink, thus leaving a very uneven orange peel like finish.

Many people have been experiencing this difficulty because of accelerated finishing schedules and high luster finishes. To eliminate this, you should allow a 3-coat 27% solids lacquer finish to dry at least 48 hours after it goes through the oven, or overnight in an oven at 120° F.

Are You Rubbing Enough?

3) Perhaps the main trouble with your finish is that you are not rubbing it enough. Since you say that the orange peel is worse on the ends, and since everybody does less rubbing on the ends, I think poor rubbing may be your trouble.

Highly polished finishes require much more rubbing than do dull rubbed finishes. With three coats of 27% solids lacquer you should be able (if the lacquer is dry and hard) to rub the surface very smooth. Even if there is a small amount of orange peel in the final finish, this can certainly be rubbed out of a finish with the film thickness that three coats of 27% solid lacquer produces.

Of course, if your finish shows orange peel before rubbing, the cause of this should be removed because it always costs more money to rub rough finishes smooth than it does to rub finishes that are smooth and free from orange peel.

Previous issues of this magazine have carried excellent articles on finishing and rubbing and polishing, and I would refer you to these articles if you have in mind making a change either in your finishing or rubbing methods.

If you will send me (through this magazine) the information that I mentioned at the beginning of this

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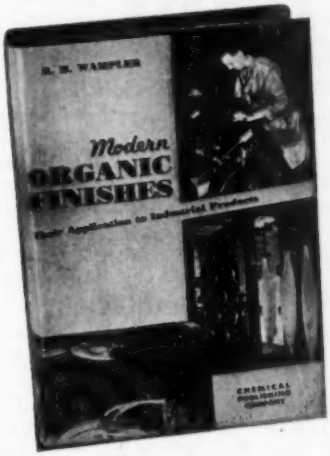

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This book contains 452 pages of the latest information on finishing. It describes modern finishing materials and equipment for their application, drying, conveying, etc., so that the reader may have an overall picture of modern industrial applications. Throughout, the main emphasis is on proper selection and use of materials to get the best possible finish at minimum cost.

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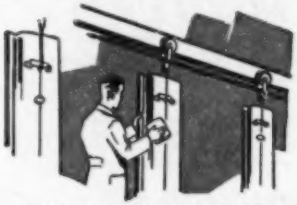

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3639 N. Columbia Blvd., Portland, Ore.

article I will be glad to suggest a complete finishing and rubbing-polishing schedule for the job.—*H. W. Chester.*

From the description you give, I doubt whether your trouble is orange peel. If you have a good long-flowing leveling lacquer that appears to level when sprayed, I don't think you could have orange peel trouble. Your air pressures seem to be okay—although I would suggest 55-lbs. rather than 70-lbs.; 55-lbs. is enough for 90% of all lacquers used on furniture today.

In one paragraph you say that the condition is worse on the sides than on the tops. This leads me to believe that your condition could be a "dry" spray rather than orange peel. If lacquer is sprayed "dry" or with too much air atomizing pressure in relation to the fluid pressure or flow of lacquer, a dry pebbly condition will result. When left as is, in a satin finish or dull rubbed, it is not so noticeable, but when polished it often looks like orange peel. If the sides could be wet-sanded first, before polishing, most of this condition would be eliminated.

I notice you use three coats of top lacquer of 27% solids. With three coats of this quality of lacquer you should get a beautiful finish. Rather than diagnose your trouble I would like to make a few suggestions first and then outline a schedule you might try.

Try about 3-oz. of lacquer retarder to each gallon of lacquer, to increase the leveling of your present finish. Use 55-lbs. of air atomizing pressure. Use not over 20-lbs. fluid pressure—preferably 15 to 18-lbs. Check your spray gun with the manufacturer for right fluid tip and atomizing air cap. Check viscosities of the lacquer used. A viscosity of about 24 to 28 seconds, as measured on a Ford No. 4 viscosity cup; or 32 to 38-sec-

QUALASOLE

AMERICA'S FINEST PADDING LACQUER

Creates new life in wood

- **It is the Modern French polish**
- **Produces a beautiful, rich finish**
- **Can be applied easily with a pad**
- **Quick drying, durable, permanent**
- **Meets present day production demands**
- **No other finish compares with QUALASOLE**

Order a Trial Gallon Can Today!

QUALATONE PRODUCTS INCORPORATED

21 GAY STREET, NEW YORK 14, N. Y.

West Coast Distributor: H. Behlen & Bro., Inc., 1755 Berkeley St., Santa Monica, Calif.

onds as measured on a Zahn No. 2 cup, is about right. These viscosities are measured at room temperatures of 68° to 75° F. Do not follow succeeding coats of lacquer too quickly; allow reasonable drying time.

Another possibility is that although it looks like your lacquer is flowing out smoothly, when you begin to polish the cabinet, small white pin points may appear after the cleaning up. This condition is not orange peel but rather "air trapping" and could be caused by more than one condition; to name a few, for instance, too much air, wrong air cap on spray gun, improper application, drafts, too fast solvent evaporation or releases, wrong lacquer formulation.

Each condition would have a different characteristic and only an expert could tell. Your finish supplier should know, and the firm's service man could show you what is wrong—although I notice you say that the lacquer manufacturer is unable to help you. Incidentally, I am surprised at such a statement.

You might try reducing your present lacquer in the proportion of five parts of lacquer to one part of thinner, and then four parts of lacquer to one part of thinner. This would reduce the solids content to about 22½% and 21% respectively, but since you are using three top coats anyway, your finish will not suffer; rather, I believe that it will be improved.

Here is my suggestion for your schedule, using one sealer coat and three lacquer coats as you are now doing. (You are doing more than many of your competitors in that respect. Very few use more than two lacquer coats, although they do double coat the tops of cabinets.)

1) Use NGR stain—any color—and

spray it at not more than 35-lbs. air pressure. Apply a wet coat.

2) Wash coat. If shellac, use it very thin. If clear lacquer, reduce it in the proportion of one part of lacquer to five or six parts of thinner. If lacquer sealer, reduce it in the proportion of one part sealer to four or five parts of thinner. The difference is in solids applied to the wood. Let dry; then the surface may be sanded very lightly—but be careful to avoid cutting through.

3) Fill. Apply filler in a light creamy consistency, and when the solvent has started to leave, pad the filler in across the grain, and clean up with the grain. If the mahogany is of the very open-pore type, a careful padding of the filler while wet is necessary. Filler should dry at least four hours, and preferably over night.

4) Sealer. Use a lacquer sealer of 18 to 21% solids content; viscosity not more than 35 to 40 seconds as measured with a No. 4 Ford cup. Air pressure 50 to 55-lbs. at spray gun; 18-lbs. at material hose. Spray a full wet coat. The top can be double coated if extra build is desired, but I would not do so here as you are going to use three coats of lacquer. Let the sealer coat dry at least two hours for machine sanding; one hour for hand sanding. Blow off stearate dust before coating the surface with clear lacquer.

5) First coat clear lacquer. Spray a full wet coat; 55-lbs. air pressure at spray gun; 18-lbs. air pressure at tank or pump. Spray at right angles to cabinet surfaces—and not too close to the work. Too close application with the spray gun can force air into the lacquer film—air that won't get out—and also it may cause sags and runs. Too far away from work will leave a dry condition. Check your lacquer for viscosity; not over 30 seconds on a Ford No. 4 cup should be okay.

The lacquer should go on smoothly and, after spraying is completed, the wet film should start to level out. A blushing condition will indicate too fast solvent evaporation. In looking at the sprayed piece, tiny air bubbles will appear at the surface and then break. The lacquer will then flow into itself and more will appear. If the lacquer is properly formulated this will continue until all of the air used to atomize the lacquer has escaped, and the lacquer film has settled into a smooth mirror-like finish. If too fast a solvent release occurs a condition known as "trapping" will result. Tiny air bubbles will be "trapped" in the film before they have a chance to escape. This will show up later when your workers are polishing the finish.

6) Spray second coat of clear lacquer.

7) Spray third coat of clear lacquer.

A minimum of two hours drying time between coats, and four hours to eight hours before the last coat, is desirable. On this last final coat, the tops of the cabinets can be given a double coat to increase the "build"; that is, spray the top first, and then the rest of the cabinet, going over the top again before it leaves the spray booth.

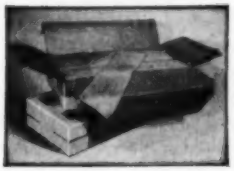
If the lacquer you are using is of first quality, from a reliable concern, you should have no trouble in getting a really fine quality finish with this procedure. There are tricks to all trades and correct application is as important as using a good material. —*Edwin Hogstrom.*

Matthews Joins Ross Engineering

Tom Matthews, who for a number of years has been engaged in industrial processing and high temperature work, as well as rubber research throughout the Midwest, has joined the staff of J. O. Ross Engineering Corporation as a sales engineer in the Detroit office.

NOW! Tack Cloth in Handy Rolls *or* Cut Bulk

Cut off any size piece and use as needed.



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Now you can get Tack Cloth packed the way it's easiest for you to use—either in 150 yard rolls of 36" wide cloth or in handy cartons—100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will **stay** SOFT and TACKY until the very last bit is used up.

The Cut Bulk size is 18" x 36"—folded to 4½" x 18" for easy handling. **All of our Tack Cloth is Spontaneous Combustion-Proof, Lint-Free and Wax-Free.** It's clean and sanitary—there's no waste.

Write today for complete information, prices and samples.

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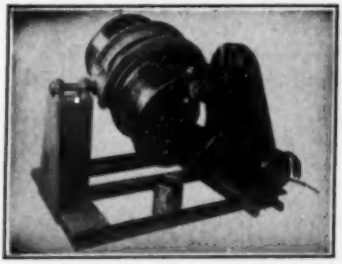
"The Tacky Wiper Specialists"
7027 N. RAVENSWOOD CHICAGO 26, ILL.

Also Individually Packed in Glassine Envelopes —144 to the Carton.

A WARRANTY OF SATISFACTION IN EVERY CARTON

DRUM TUMBLER

...for mixing materials in suppliers drums



Will tumble any drum end over end at 30 rpm. Detachable crank on end of motor shaft makes it possible to turn down into any position for testing contents or draining. Portable ramps for fast insertion and removal of containers.

ASSURES:

- Uniform mix
- Easy inspection during operation
- Withdrawals in any quantity needed.

AVOIDS:

- The fire hazard of open drums
- Contamination of one product with another
- Cleaning of equipment between mixes
- Residual sludge

Send for descriptive literature!

THE VOL-U-METER CO., P. O. Box 54, Buffalo 16, N.Y.

Binks Light Weight Spray Gun for Production

To satisfy the demand for an inexpensive, lightweight spray gun that produces fine finishes, Binks Mfg. Co., 3122 Carroll Ave., Chicago 12, Ill., has developed a new type of spray gun known as Binks Model 29.

The manufacturer says that high quality finishes are obtainable with this gun because it uses nozzle setups that are standard on most of Binks heavy duty production spray guns.

The gun body of Model 29 is an aluminum casting; reduces the weight of the gun to just 20-oz. Because of its lighter weight, the Model 29 should cut down operator fatigue. This feature is especially valuable now, for the defense program means more spray painting operators will be women.

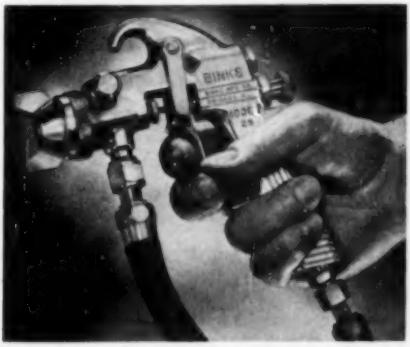
The Model 29 has a cartridge-type air valve (see A on cut-away) for quick replacement. The operator or mechanic simply removes the old cartridge, inserts an inexpensive new one, and the 29 gun is again ready for use.

Model 29 has a brass and steel material passage (see B on cut-away). This passage protects the aluminum casting from the corrosion and erosion caused by certain paints and other fluids.

Air enters the Model 29 gun through an inlet in the bottom of the handle (see C on cut-away). This arrangement distributes hose weight properly and makes it easier to manipulate the gun. If desired, Model 29 can be furnished with the air inlet at the back of the gun (see D on cut-away).

Because the air passages in this new gun are large, internal air friction is low. In tests made by the manufacturer, the drop in air pressure between the air inlet and the nozzle

Notice features of new light-weight gun.



For spraying lacquer, synthetic enamel, paint and finishes of light and medium viscosity.

of Model 29 was much smaller than one might expect.

Binks will make nozzle set-up recommendations if you tell them the material to be sprayed. If the coating is unusual, you should send a sample to the Binks Laboratory in Chicago for analysis.

To obtain full information and prices on the Model 29 gun, ask for a copy of Bulletin 29. This will be sent without obligation to all readers of this magazine, upon request.

Cleans, Rustproofs and Dries Metal Products

Industrial Washing Machine Corp. of New Brunswick, N. J., is the manufacturer of a new rustproofing machine designated as Model CT-RP. Currently in use at a prominent government installation, this machine features an unusually high capacity of 500-sq. ft. of conveyor space per hour.

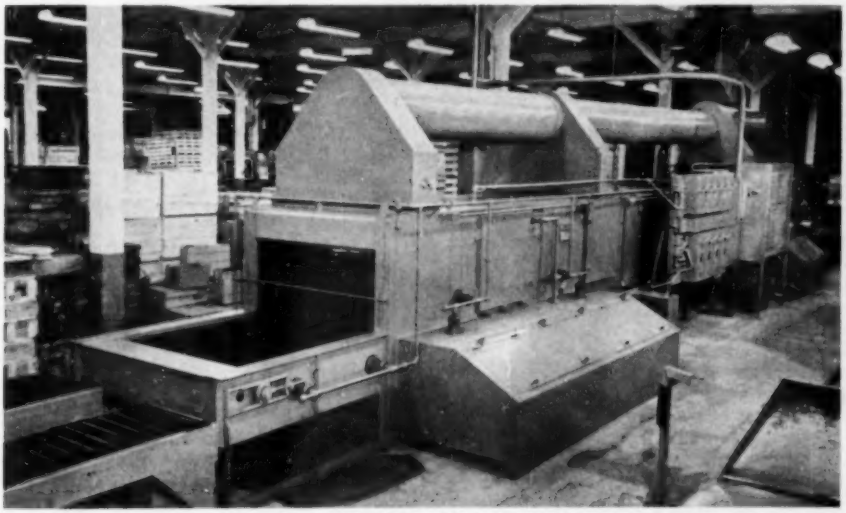
The machine first sprays the work with a rust preventative; then a built-in, explosion-proof infra-red oven quickly dries it after which the work is cooled to permit immediate handling.

Additional safety features include an automatic C-O_2 system and fully electrical operating controls. The continuous conveyor is kept free, clear and clean of residue by a special rotating brush and a detergent spray. This self-cleaning feature eliminates the need to stop the machine and interrupt production to clean the conveyor. The machine offers the extra merit of rustproofing versatility because it is adaptable for vari-shaped-and-sized work.

All-Purpose Metal Cleaner

Following extensive field tests, the Magnus Chemical Co., South Ave., Garwood, N. J., announces a new and highly effective cleaner for all kinds of metal parts, Magnus 751.

It is safe for all metals, not attacking, pitting or marring aluminum



Takes a variety of shapes and sizes in metal parts; cleans, rustproofs and oven dries them.

alloys, bearing metals, cadmium, solder, die cast or any other soft metal. It is non-inflammable; cleans at high speed, penetrating, loosening and removing all foreign deposits faster and better than ordinary cleaners. A noteworthy characteristic is the extremely long life of the cleaning solution. Magnus 751 can be used in either hot or cold solution and is followed by a simple cold water rinse after the cleaning period.

Where a large volume of parts has to be cleaned regularly, this cleaner works best when used in the Magnus Aja-Dip Cleaning Machine, where agitation speeds up the cleaning action and all traces of deposits are removed, making hand brushing unnecessary. This cleaner also strips paint and other coatings from the parts it cleans.

Green "Blackboard" Paint

It is now possible to transform any surface into a chalkboard writing slate by painting it with Rite-On-Green paint. A coat of this paint creates the same slate-like writing surface qualities of expensive chalkboard in a new non-glaring, easy-on-the-eye green color. It takes erasing well with an ordinary chalk eraser and can be washed clean without harm to the finish.

Recent studies on eye strain have indicated that green is more restful and soothing to the eye than the conventional black or natural slate, giving greater value to the written message.

Surfaces must be clean, smooth and dry before applying the new paint. One coat is sufficient for most surfaces; however, new wood, plywood or any other exceptionally porous surface requires two coats. A product of Sapolin Paints, Inc., 229 E. 42nd St., New York, N. Y.

Air-Driven Reciprocating Portable Sander

A new pneumatic reciprocating sander is announced by the Detroit Surfacing Machine Co., 1333 E. Eight Mile Road, Detroit 20, Mich. This company has manufactured electrically powered Detroit Easy Finishers for the past 15 years.

The new model operates with the same straight-line, reciprocating action that has always been featured in all model Easy Sanders. This action is highly desirable on many types of work, as it permits sanding up to

Air driven; weighs only 6-lbs., no vibration.

right angles and does not cut abrasive patterns. The unit is light in weight. A well designed grip provides for comfortable one-hand operation. For the convenience of the operator, there is also a front handle that is useful for overhead and other awkward applications.

It is claimed that this unit is practically free of vibration. Efficient operating speed is maintained with air pressure of 70-lbs.

It is a full size, sanding, rubbing and polishing machine, taking 1/3 of a standard 9 x 11-in. sheet of abrasive paper. Abrasive paper cut to size is available from most abrasive manufacturers. An entire new type of abrasive holder insures ease in attaching even the coarsest abrasive grits, paper or cloth back.

"Once around is enough"

Yes, that's all you need
when you use . . .

"FLOWETTE"

HOT SPRAY LACQUER

Write Us for Literature Describing This Modern Method of Finishing

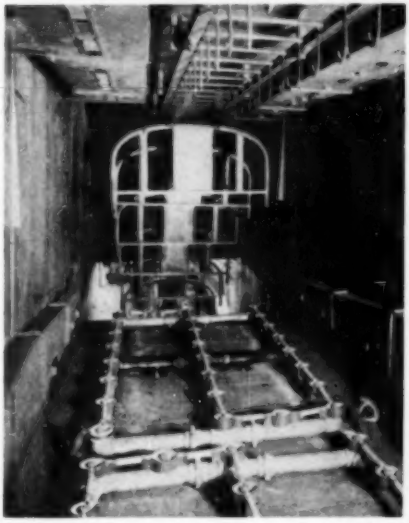
If You Already Have Hot Spray Equipment We Would be Very Glad to Send You a Sample of Our Lacquer

DENNY, HILBORN AND ROSENBACH
INCORPORATED
234 N. 12th St., Philadelphia 7, Pennsylvania

★ *Manufacturers of Protective Coatings For Nearly Half A Century*

Burn-Off Cleaning by Gas-Fired "Radiant-Heat"

The preparation of metal parts for finishing can be taken care of by using the gas-fired "Radiant-Heat" principle, according to Burdett Mfg. Co., 3433 W. Madison St., Chicago 24, Ill. The company claims that the Burdett Burn-off process assures a product free from any oil, grease or other impurities in laps, seams, joints, corners and bends.



Inside gas-fired radiant-heat burn-off oven wherein products are cleaned for painting.

A heating cycle of about five to eight minutes, at a temperature of 650° to 675° F., is said to result in a clean, dry surface which offers excellent adhesion for modern finishes. In addition to removing surface film, the process produces a rust-inhibiting surface.

Further information may be had by writting or telephoning the Burdett Mfg. Co.

Copper Napthanate Dip for Wood

A new member of the Fungus-Ban family is announced by The Wilbur & Williams Co., Boston 35, Mass. This is a copper napthanate dip for wood to be exposed to immersion in water. This product imparts a green color to the wood, as indication that it has been treated, and gives primary protection against dry rot. The preservative treatment can be painted over with ship bottom paint or normal paint after 24 hours drying, as it is of a non-crystallizing nature in itself. It is made to meet Federal Specifications MIL-W-906 Type 1 or Class A.

New Fluid Connectors For Spray Guns

A quick twist and a paint spray gun can be switched from one color to another, without tools. This spray gun development is announced by the DeVilbiss Co., Toledo, Ohio, manufacturer of spray-painting and finishing equipment. [*Cont'd on page 120*]

Quick detachable fluid hose connections.

HOT Lacquer NEWS

PUBLISHED PERIODICALLY BY HERCULES POWDER COMPANY IN THE INTERESTS OF BETTER FINISHES AND FINISHING

Hot-Spray At Oshkosh Motor Truck Improves Gloss, Speeds Production

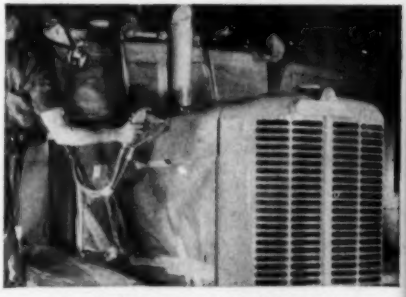
Heavy-Duty Trucks Get Heavy-Duty, Low-Cost Finish

Oshkosh 4-Wheel and 6-Wheel drive trucks are designed specially to perform in fields which are too severe for the conventional rear drive trucks. Manufacturing specifications call for a finish that is equally durable—and actual service has proved that hot-spray lacquer does the job.

According to Mr. A. E. Stoll, Production Manager, "Hot-spray lacquer has improved our finish by better gloss, has cut the over spray by use of 60% less thinners and eliminated periods of blushing.

"The elimination of blushing by use of hot-spray solved our problem of slow-up in finish painting during periods of high humidity, which in our climate is quite frequent in summer and fall.

Typical fleet of Oshkosh trucks, in service for City of Yonkers, N. Y.



Durable hot-lacquer finish being applied to heavy-duty Oshkosh truck.

"We are satisfied that hot-spray lacquer has improved our finish and increased our painting production."

NEW MILITARY LACQUER SPEC.

A new military specification for lacquer is now issued and official. Identified as "Military Specification MIL-L-11195 (ORD) Lacquer, Lustreless, Hot Spray (For Ammunition)" Hercules will send you full information on hot lacquer, types of heating equipment available, and the performance record of hot lacquer in many industries.

HERCULES POWDER COMPANY
INCORPORATED
Cellulose Products Department
928 Market Street, Wilmington, Delaware

Made of lightweight, durable aluminum, the new fluid hose connector is self-sealing by virtue of a clever spring-type ball valve set against a synthetic rubber seal. When the connector is locked in place the valve is opened for use. The special rubber seal is impervious to paint, solvents or other materials used in spraying.

Designed for use with ⅜-in. fluid hose, the new fluid connector is identified as DeVilbiss type HC-4575. The new device completely eliminates the need for stopping production to clean a spray gun. The ball valve is leakproof and a bayonet principle used in locking the connection provides a sure and permanent connection.

Wood Filler in Stick Form

A new filler for wood called "Amler Soder Stick" is announced by Amler Laboratories, 8200 Harvard Ave., Cleveland 5, Ohio. It comes in stick form about ⅜-in. diameter, 8-in. long.

To apply, heat gently until it is soft like putty; then spread with a knife or paddle. When heat is removed, the soder sets immediately; then it can be sanded and coated. It dcesn't shrink, pin hole or discolor the surface to which it is applied.

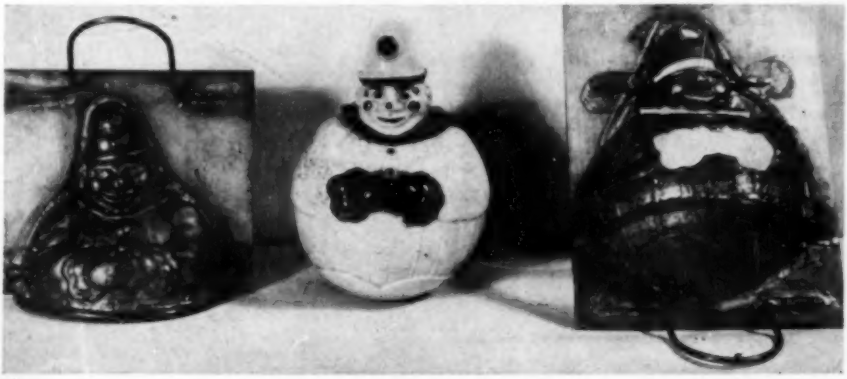
Contour Masks for Spray Decorative Painting

Increased production with controlled fidelity of marking is now easily possible with masks for decorating and identifying products requiring simple or elaborate color schemes. The Matthews Spray Mask is a shell-like mold which fits snugly over an object to be colored. The surface of the object to remain protected is covered by the mask, while cavities in the mask permit color to be applied on the desired parts.

Bridging, a method by which an "island" or small pattern is suspended from the main body of the masks by thin wires or rods, permits color spraying completely around any portion of the product. Baffling is the erection of one or more partitions or "splash guards", which allows the spraying of many colors on an object with a single mask.

To permit easy insertion of a product into the mask, backing-out, or the building up of any portion of the mask in the electrocasting process, may be used. Backing-out is also necessary in multi-color spraying so the contact surface of the mask will not touch "wet paint" areas.

The Matthews Spray Mask is not a



Each spray mask is electrocasted to conform perfectly to every contour of the product.

Perfect Performance

Finishes of definite durability and distinction... this is the *Kirker* reputation, established and lived-up to. The name that gets 'top-billing' from the many industries it serves. A Kirker finish offers sure fire sales appeal to everything it covers!

When star quality is demanded, buy the best...

..and the best is KIRKER.

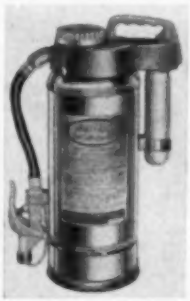
Kirker CHEMICAL CO

ONE EAST ELEVENTH STREET • PATERSON 4, NEW JERSEY

stock item, since each mask is engineered to fit a customer's specifications. For more complete information and literature, write to Jas. H. Matthews & Co., 3931 Forbes St., Pittsburgh 13, Pennsylvania.

Stainless Steel Dry Chemical Fire Extinguisher

New 20 and 30-lb. capacity light weight, stainless steel, dry chemical fire extinguishers are announced by The Buffalo Fire Appliance Corp. of Dayton, Ohio.



This new extinguisher with finger tip control, shoots a chemical heat insulating cloud up to 20 feet . . . snuffing out flames on contact. The Buffalo dry chemical used in this extinguisher produces 1100 times its volume in non-toxic, flame-killing gas on contact with flame.

The Buffalo Stainless Steel Dry Chemical Extinguisher gives instant protection against B and C class fire hazards. Buffalo Stainless Steel Dry Chemical Fire Extinguishers are Underwriters' Laboratories approved and exceed their requirements in efficiency.

PAINT STRAINERS

FOR STRAINING LACQUERS, ENAMELS, PAINTS OR VARNISHES.

Made of heavy paper stock with cloth inserts in coarse, medium, fine or extra fine mesh. 6" in diameter.

LOUIS M. GERSON CO.

BOX 175 MATTAPAN, MASS.

Tumbling in Container

Combining end-over-end rotation with rotation on its central axis—this is what happens to a 5-gallon container when it is clamped into the cradle of a small motor driven machine offered by Vol-U-Meter Co., P. O. Box 54, Buffalo 16, N. Y.

This dual rotation at 30-rpm. serves to shake up and thoroughly mix the contents of the container. The same machine can be used as a small tumbler for cleaning, polishing or coating quantities of small objects.

Safe Hand Cleaner

A hand cleaner that is safe, fast and effective for cleaning workers' hands, even when grime and grease are deeply imbedded in the skin, is announced by The Boyer-Campbell

Removes paint, grease or grime quickly.

No. 150

SpeedWay SpeedSander *Sands, Rubs, Polishes*

. . . FOR DRY OR WET FINISHING

Motor-Driven 3/16" Orbital-Motion

Powerful, direct-connected (no gears), 3450 r.p.m., 100-120 v AC air-cooled motor. All sealed ball-bearing construction. Die-cast aluminum housing, polished. All-position handles. In hand weight only 5 lbs. Insulated with ground wire for wet as well as dry sanding or rubbing. Available accessories—deep contour pads, surface plates, felts, etc. Takes any sheet abrasives—3 covers 4½" x 6½" from standard 9" x 11" sheet.

A time saving quality tool priced so every worker can have one.

$34.50

Write for Circular

SpeedWay MANUFACTURING CO.
1886 So. 52nd Ave., Cicero 50, Ill.

Positive action of BARRETT TYPHOON CENTRIFUGAL WASHERS provides for quick, thorough parts cleansing

In these efficient centrifugal machines the washing solution enters the top of the whirling load under valve control. The operating principle—being that of a typhoon—gives the washing solution a spraying, swirling, and surging action which thoroughly permeates the contents. During this action, centrifugal force creates hydrostatic pressure within the work container. That proportion of the deluge going to the bottom is forced up the side and out carrying off the contaminated fluid.

A thorough, quick cleaning is definitely assured by flowing sequence. Two or more liquids may follow, making it possible to wash, rinse or provide any further treatment as required.

Several Barrett installations involve the use of four machines operated by one man who loads and unloads in three minute cycles. Washing time is only one minute. Another type of set-up provides for recovering oil, washing, drying, and coating with rust-proofing material.

As in all Barrett Centrifugal machines, provision is made for convenience and safety of operation.

Send at once for details of Barrett Typhoon Washer

THE LEON J. BARRETT COMPANY
Designers and Builders of Centrifugal Machinery
1703 GRAFTON ROAD WORCESTER 1, MASS.

Co., 6540 St. Antoine St., Detroit 2, Mich. When it is rubbed on the skin, it turns to a liquid and literally melts the dirt away. "Skin-Cote" is safe and easy to use, allowing the worker to clean up quickly. It contains a solvent, buffered by emollient oils, petrolatum and soothing lanolin to protect the skin.

"Skin-Cote" waterless hand cleaner makes unnecessary the use of solvents and thinners which are not only harmful to the skin but also create fire hazards that are often tragically disastrous. It is effecive for removing such materials as gasket sealing compounds, rubber cement, paints and resins; also can be used for removing grease marks from finished painted surfaces.

"Tarlac", Protecting Coating

Coal Tar pitch has been compounded by a recently developed process into a fast drying protective coating by breaking it down into minute molecules, then combining it with water and a stabilizing emulsification agent to form a permanent suspension that can be brushed or sprayed.

Available under the trade name "Tarlac", this new coating is said to retain the protective and adhesive qualities of coal tar pitch, to be impervious to oils, greases, other petroleum derivitives, acids, alkalis, water and condensation. It will not crack at low temperature or run at high temperature. Recommended as a protective coating for concrete structures, floors, masonry, etc., metals exposed to corrosive elements, mastic floors or other black top surfaces, wooden platforms, etc.

"Tarlac" dries to a tough, enduring, flat black film, is completely insoluble in water, oil or gasoline. It is a product of Flash-Stone Co., Inc., 30 E. Rittenhouse St., Philadelphia 44, Pennsylvania.

Porcelain-Like Enamel for Outdoor Signs and . . . .

A new porcelain-like enamel, designed to withstand the rigors of outdoor life, and which provides long-lasting resistance to the weather and abrasion, has been developed by the United Lacquer Mfg. Corp., 1001 W. Elizabeth Ave., Linden, N. J.

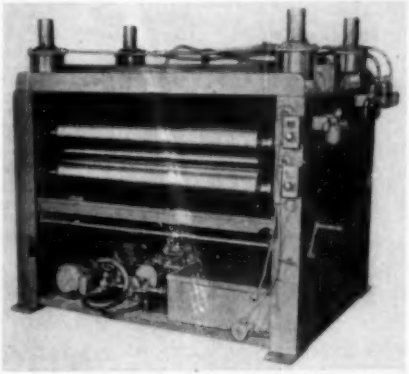
On its first assignment, the new Porcelan-amel is doubling the life expectancy of outdoor signs. (Porcelan-amel was developed for the Colonial Neon Co., Inc., of North Bergen, N. J., manufacturer of signs for major oil companies.)

The new enamel provides excellent resistance to the weather, chipping abrasion, mechanical abuse, salt-spray, alcohols, and acid solutions.

Porcelan-amel will also find application in finishing medicinal and chemical cabinets, tables and other hospital and laboratory equipment.

New Heavy Roller Coater

The Union Tool Corp., Warsaw, Indiana, pioneer in the development of roller coating machines for the metal industries, offers the improved roller



For applying drawing compound and other coating materials, including finishes.

coater shown in the accompanying picture.

The function of the Union Roller Coater is to uniformly apply drawing compounds to sheet steel prior to the drawing operation. The machine shown here is equipped with three pairs of rolls. The first pair is of hardened steel and is used for deburring stock. The second pair is neoprene-covered and is used for actual application of the compound. The third set of rolls is of hardened steel and is used primarily as squeegee rolls for wiping off excess compound and for forcing remaining compound into the pores of the metal.

The machine is equipped with circulating pumping unit to feed the coating rolls. Models are built in sizes to fit any stock up to 96-in. in width.

The Union Tool Corporation designs and manufactures coating machines to meet any production requirement or for application of any type compound, including finishing materials.

Coating for Acetate Plastics

Development of a new coating material for acetate plastics is announced by Bee Chemical Co., 13799 S. Avenue "O", Chicago 33, Ill. The new coating "Logoquant Series A" has unusual properties of hardness, flexibility and adhesion, in addition to extreme resistance to embrittlement, rapid drying, and can be sprayed on in any weather condition including 100% humidity.

"Because of toughness, acetate plastics are used widely for consumer items," the announcement states. "Toys particularly, and many plastic items for Christmas which will receive intensive use, are more and more being made of acetate today.

"The major problem in coating acetate plastics has been that adhesion

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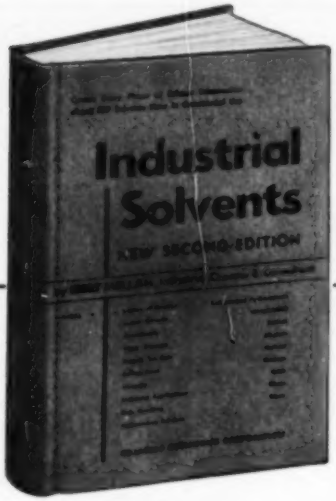


This new edition is an excellent text and reference book of 758 pages, containing a tremendous amount of authentic and complete information on industrial solvents and their uses—for example, in cleaning and finishing materials and wherever solvents are used in industry. The revised contents are organized and classified in easy-to-read, easy-to-find form for practical busy men.

Its practical contents are divided into 16 chapters, some of which include such headings and sub-headings as solvents, non-solvents, evaporation rate, boiling point, flash point, toxicity, viscosity, safe handling, hydro-carbon solvents, alcohols, ketones, acids, ethers, esters, etc. It contains many new charts, illustrations and conveniently tabulated material, all developed to help the reader grasp the factual information quickly. The alphabetical subject index covers 11½ pages.

This book will prove valuable to key men in the industrial field, who have responsibilities in connection with the cleaning, surface conditioning or preparation of products for painting, plating or polishing, and those concerned with the selection, purchase, storage, handling, testing or use of finishing materials and thinners for same.

Price $12.00—Money Back Guarantee.

INDUSTRIAL FINISHING

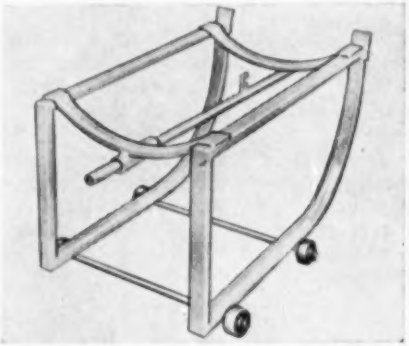
1142 N. Meridian St. Indianapolis 4, Ind.

and hardness were difficult to secure because the higher content of plasticizers in acetates, affects and softens the outer finish of the product.

"The new coating materials for acetate are available in a full line of bright metallic and pigmented colors."

Barrel and Drum Cradle

The GS steel barrel cradle is light in weight, yet strong enough for heavy loads. It is designed for the storing and draining of drums and



Notice the loading bar . . for greater safety.

barrels; an all steel unit built for long life. It is a product of General Scientific Equipment Co., 2700 W. Huntingdon St., Philadelphia 32, Pa.

Industrial Tape Has a New Chicago Warehouse

A rapid growth of business throughout the middle west has led the Industrial Tape Corp., producer of Texcel and Permacel pressure sensitive tapes at New Brunswick, N. J., to relocate and increase the amount of its warehouse space in Chicago.

The new Chicago warehouse, located in the Commerce Mart at 251-315 E. Grand Ave., provides 40% more space for larger inventories and has modern truck loading docks and a 10-car rail siding. As a result, faster handling of customers' orders is anticipated.

RONCI SPEEDIP WHIRL ENAMELER

Made in Two Sizes, R-100 and R-200 Capacity 312-cu.in. and 1206-cu.in.

IDEAL FOR LACQUERING AND ENAMELING SMALL PARTS UP TO 7-IN. IN LENGTH

CUTS COSTS, SAVES UP TO 80% OF MATERIAL

Carries up to 75-lbs. per load, and up to 30 loads per hour can be coated with lacquer or enamel in these machines.

All operations are within the machine. Dipping tank is raised, submerging the parts in the basket, and then lowered and the parts whirled, throwing off excess material. No additional outside tanks required; no cleaning necessary when changing colors; no loss of material.

Prompt Deliveries

Write for further information and submit samples to be coated.

RONCI MACHINE COMPANY

A Division of F. Ronci Co., Inc.

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Humidity Indicator is Easy to Read

The Airguide humidity indicator, clocklike in appearance, 4⅝-in. in diameter, registers exact humidities from 0% to 100%, and will operate in temperatures up to 175° F.

The floating type, humidity sensitive element operates on absorption principles, and is enclosed in a metal case.

It is made by Fee & Stemwedel, Inc., 2210 Wabansia Ave., Chicago 47, Illinois.

"Ti-Loc", Vitreous Enamel Direct-to-Steel

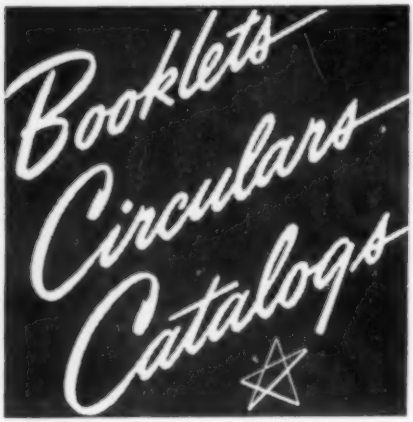
A new development in protective coatings is announced by the Strong Mfg. Co., Sebring, Ohio, manufacturer and processor of porcelain enameled steel products.

The coating, called "Ti-Loc", is a one coat, white titanium vitreous enamel direct-to-steel . . . a goal long sought by enamelers. This is made possible by a special process method developed by Strong and now under patent proceedings. No premium steel is required. Satisfactory coatings have been achieved at a thickness as as low as .003-in.

"Vacu-Blaster" Blast Cleaner

A new catalog issued by Vacu-Blast Company, Inc., tells in detail uses and merits of the company's "Vacu-Blaster" —a compact, movable blast-cleaning equipment for metal, concrete, brick, stone or wood surfaces. This blast-cleaner has a dustless vacuum pickup which removes abrasives and debris simultaneously with the blasting operation.

Vacu-Blast Company, Inc., headquarters is at 350 Peninsular Ave., San Mateo, California. Branch offices are maintained in New York, Chicago, London and Mitcham, Australia.



Protective Outdoor Lighting

Complete plans for outdoor industrial lighting are provided in a new 24-page booklet (B-4791), Light for Plant Safety and Security, available from the Westinghouse Electric Corp., Box 2099, Pittsburgh 30, Penna.

Liquid Processing Equipment

A new 32-page (8½x11-in.) catalog printed in two colors reveals interesting illustrations and informative facts about a line of filters, mixers, pumps and tanks manufactured by Alsop Engineering Co., Millidale, Conn.

Anti-Rust Paints Bulletin

Publication of a bulletin (L-4284) descriptive of its PCA Brand Anti-Rust paints is announced by the Paint Corporation of America, Fidelity Bldg., Cleveland 14, Ohio. This bulletin lists the features and prices of PCA-100 Black and PCA-101 Clear anti-rust paints.

Shell Chemical Expansion at Houston, Texas

In a move to increase the supply of tetraethyl lead and ethyl cellulose, Shell Chemical Corp. will expand its ethyl chloride production capacity. The new addition going in at Houston has Government approval.

Ethyl chloride is a basic starting material for the manufacture of tetraethyl lead, antiknock fluid for motor gasoline and aviation fuel. It is also used for the manufacture of ethyl cellulose, a strategic plastic needed in millions of pounds by the Armed Forces for classified applications. An equally large volume of ethyl cellulose is used for normal peacetime production of such varied items as waterproofing compounds, lacquers and varnishes, transparent wrapping films, coated paper and textiles.

"Steelband" Strapping

Allegheny "Steelband" strapping, seals, tensioners, sealers, and accessories are illustrated and described in a 6-page folder published by Allegheny Steel Band Co., Box 716, Pittsburgh 30, Penna. Allegheny "Steelband" products are used for banding all types of packages, bales, boxes, bundles, and pallets.

Visual Planning Catalog

"Visual" Planning Equipment Company, Inc., Pennsylvania Avenue at River, Oakmont (Allegheny County), Penna., announces that it has a new 80-page catalog available on request. This catalog contains the "Whys" of 3-dimensional planning, explains the functions and advantages of such planning in full detail, outlines and illustrates "Visual's" Repro-Templet System of producing reproduction prints.

Brandt's Production Facilities

Charles T. Brandt, Inc., 1700 Ridgely St., Baltimore 30, Maryland, has released a 4-page illustrated folder describing its facilities for mass production of defense prime contract and sub-contract work. The folder is profusely illustrated and itemizes the production facilities and engineering know-how available at Brandt, which won the company the coveted "E" flag with five stars during World War II.

Booklet Lists Government Specification Finishes

As a service to product manufacturers and commercial finishers, The Egyptian Lacquer Mfg. Co., South Kearny, N. J. and Lafayette, Ind., has published a booklet listing practically all U. S. Government Specifications on finishes issued to date of printing.

The booklet lists the U. S. Government specification code number, gives complete ingredient detail and shows drying periods required between applications. As new specifications are released, supplements will be made available.

The booklet is free when requested on your company letterhead with your name and title, sent to Egyptian Lacquer Mfg. Co., Box 444, Newark 1, New Jersey.

How to Control Viscosity

Are you interested in controlling the viscosity of materials you use? In many lines of production this close control of the viscosity of liquid materials used is absolutely necessary.

A new 8-page illustrated bulletin, printed in two colors, explains instruments and methods for measuring, recording and controlling the viscosity of materials used in production. Write Norcross Corp., 247 Newtonville Ave., Newton 58, Mass., and ask for Bulletin V-1000C.

Materials Handling Booklet

A 24-page booklet titled, "The How Book of Cost Cutting Materials Handling" is now available from the Philadelphia Division, Yale & Towne Mfg. Co., 11000 Roosevelt Blvd., Philadelphia 15, Penna. A revised edition of a previous booklet printed in 1947, the "How Book" was prepared under the guidance of Dr. V. S. Karabasz, Professor of Industrial Management, Wharton School, University of Pennsylvania.

A large portion of the "How Book" is concerned with basic background material covering types of skids, pallets and other industrial handling tools. Most of the balance covers a comprehensive plan for evaluating present handling methods through an engineering analysis much like a time and motion study.

Enclosed in the book are several charts and summary sheets for making a materials handling analysis.

Aircraft Metal Cleaning

Oakite Products, Inc., 32F Thames St., New York 6, N. Y., has published a 48-page illustrated booklet describing specialized materials, procedures and equipment for use in cleaning and preparing metal surfaces and related processes involved in aircraft production.

The booklet contains data on preparing aluminum for anodizing and painting, by immersion and power spray washer, also cleaning aluminum before and after heat treating and stripping paint from aluminum. Other subjects included are cleaning magnesium for finishing, and treating wash water in paint spray booths.

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LIQUID ENVELOPE

PEELABLE SPRAY-BOOTH COATING

Using expensive labor to scrape down spray-booths costs a lot more than peeling off accumulated overspray in big sheets. Safer, too. Order a 5-gallon Test-Sample at Drum Lot price.

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Hugh Russel & Sons Ltd., Montreal & Toronto, Canada

BOOKS On Finishing Available

"MODERN ORGANIC FINISHES—Their Application to Industrial Products" (452 pages) New $8.50

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"PAINT FILM DEFECTS — Their Causes and Cure" (544 pages) 12.00

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Cash Must Accompany Order—Send for Descriptive Circular

INDUSTRIAL FINISHING

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Ready-to-go Electric Heaters

A variety of small immersion electric heaters in three general types—screw-in, portable and circulation—are described and illustrated in a new 4-page, 2-color bulletin offered free by Edwin L. Wiegand Co., 7500 Thomas Blvd., Pittsburgh 8, Penna.

A Chromalox thermostat maintains the exact heat that each job requires. Their uses include heating liquids in tanks, drums and pots.

Catalog for Polyken Tape

An industrial catalog that is really a little different has just been issued by Polyken Industrial Tape, Department of Bauer & Black, 222 W. Adams St., Chicago 6, Illinois.

It is in the form of five file cards, standard 8½x11-in. in size, conveniently held together in a cardboard folder. The tabs remain clearly visible, and the cards are easily removed.

Cards are here for "General Purpose Tapes", "Electrical Tapes", "Special Purpose Tapes", and for "General Information". Across each card are sample strips of the tapes described, along with technical specifications, general information on uses, etc.

Vacuum Impregnation Brochure

The F. J. Stokes Machine Co., 5500 Tabor Road, Philadelphia 20, Penna., has published a comprehensive book on the subject of vacuum impregnation in which the process is explained, a detailed list of applications is given, and equipment used in vacuum impregnation is described and pictured.

Vacuum impregnation, which introduces an impregnating agent into a chamber where a high vacuum has been drawn, is a versatile process used in many fields. It permits treatment with impregnants of materials that would be difficult or impossible to treat satisfactorily under atmospheric pressure. Not only is the vacuum-impregnating product improved, as compared with similar products impregnated by ordinary dipping or soaking, but in many cases the saving in time is important.

Grieve-Hendry Co. Announces West Coast Distributor

Grieve-Hendry Co., Inc., 1101 N. Paulina St., Chicago 22, Ill., manufacturer of industrial portable electric ovens, announces the appointment of L. H. Butcher Co., San Francisco, Portland, Seattle, and Salt Lake City, as its West Coast distributor to the plating and related metal finishing industries.

MIX IN THE DRUM!!

- ★ Use supplier's drums
- ★ Reduce handling
- ★ Eliminate costly "clean-up"
- ★ Avoid contamination
- ★ Get fast mixing of solutions or powders

USE "U. S." EQUIPMENT!!

- ★ Rugged and dependable
- ★ Load and unload quickly
- ★ Handle variety of drums
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Write for Bulletin 265 TODAY

U. S. STONEWARE
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PROCESS EQUIPMENT DIVISION

170C

Glidden Opens Paint Store

The Glidden Co., Cleveland, Ohio, has opened a metropolitan branch at 906 N. Delaware St., in Indianapolis, Ind., to serve its wholesale and retail paint and varnish trade in that city and the surrounding territory. It is similar to a new metropolitan branch opened recently in Columbus, Ohio.

Midland Adds Dr. Russell to Its Laboratory Staff

Maintaining the policy of improving and expanding the technical staff, Mr. E. O. Robson, President of the Midland Industrial Finishes Company, announces the addition to the laboratory staff of Dr. John J. Russell as Director of Special Research, with particular emphasis in the field of Silicone Chemistry.

Dr. Russell previously was Vice President in charge of Production for National Glaco Chemical Corp., subsidiary of Ekco Products Co. Prior to that he was Director of Research at Ekco Products Co. He graduated from the University of Toronto and also received his Master's Degree there in chemistry. Subsequently, he did further graduate work at Harvard University and returned to obtain his Doctor's Degree at the University of Toronto.

Dr. Russell has served in the capacity of Research Chemist with the General Electric Research Laboratories. He was head of the Department of Chemistry at Franklin Technical Institute in Boston, a member of the National Research Council in Atomic Energy Research in Canada, and was also a Lieutenant, Special Branch, in the Royal Canadian Navy.

Dr. Russell is a Fellow of the Chemical Institute of Canada and a member of the American Chemical Society.

Mr. Robson also announces that work has been started on the construction of a new addition to the company's present factory to increase laboratory and office facilities.

Corrosion Consultant

The A. V. Smith Engineering Co., Corrosion Consultants, announces that Hugh L. Hamilton has been named to manage and direct its activities, from the present offices at 370 Trevor Lane, Bala-Cynwyd, Penna. The company will continue to conduct field surveys and studies leading to recommendations for the control of corrosion.

Industrial FINISHING Editorial

Paint Sales Are 17% Higher

Paint, varnish, lacquer and filler sales (in dollars worth) are up nearly 17% for the first seven months of 1951, in comparison to the same period of 1950, according to the Bureau of Census, Industry Division, U. S. Dept. of Commerce.

The figures are based on reports from 680 manufacturing establishments which account for about 90% of the total value of output by the entire industry.

This is the total sales and includes trade sales, industrial sales and unclassified sales. All classifications showed a drop during July 1951 as compared to June 1951, but indications are that they will have shown gains during the autumn months of the year, when the figures become available.

Paint Storage in Cold Weather

This is the season of the year when attention should be given to paint storage facilities, especially in plants where drums of enamel, lacquer and solvents are stored outside or in an unheated shed. In cold weather, production finishing materials should be warmed up to 78° to 80° F. before they are mixed and used. Remember too, a drum of material warms up very slowly when brought from "cold storage" and placed in a warm room.

You may say that production needs can be anticipated and drums of material will be brought into the plant far enough in advance to warm up to room temperature. Well, if all men were even *nearly perfect*, this practice would probably prevail but they are not; none of us is, so why not make this requirement more nearly foolproof? Either find a suitable storage place in the heated portion of the plant—one that can be walled in for storage to meet insurance regudations—or build a concrete block storage room adjoining or close to the plant and fit it up with adequate heating facilities.

The floor area of the paint storage room may be considerably reduced if accessible racks or some practical and safe facilities are provided so that drums can be stored two or three or four high and still be withdrawn in the order in which they are received.

If your storage facilities are not completely safe and satisfactory, it's time to give this important matter serious consideration — followed by suitable action. It has a lot to do with the safety of your plant and the quality of coatings which are put on your products.

Awakened by What It Did on War Contract

"We certainly missed a bet when we didn't install this equipment two years ago", declared an executive of a concern that recently put in automatic coating and oven drying facilities for expediting work on a contract for the military. Top men in the organization are amazed and enthusiastic at the remarkable perform-

NOW pre-color your metal products BEFORE fabricating

ENAMELSTRIP

STEEL, ALUMINUM, AND BRASS PRE-FINISHED

COLOR COIL

Users of Enamelstrip in continuous-feed coils completely eliminate such costly, time-consuming operations as hand feeding, shearing, cleaning, tumbling, spraying, dipping, rustproofing, baking, drying. Enamelstrip's exclusive pre-treatment and finishing process achieves a flexible, lustrous finish which withstands the stresses of drawing, bending and forming without cracking or peeling. Fabricate your metal parts and products from Enamelstrip to be sure of a smooth, glossy finish at reduced costs!

ENAMELSTRIP in any metal, any color, coated and precision slit to your specifications.

TODAY see how this important new development improves production . . . and profits! Write immediately for detailed descriptive bulletin to our National Sales Representatives:

THE COATED COIL CORPORATION

S-Y Sealers

Do not allow sealers to be the weak spot in your finishing system! Use S-Y Sealers for best results. They are tougher, provide greater adhesion, dry faster, sand easier. A test will prove convincing.

Phone—Write—Wire!

STILLE - YOUNG
Manufacturers
2752 N. CLYBOURN AVE., CHICAGO 14

"Wood Graining" ADDS Eye Appeal

American Graining Plates are photographic reproductions of fine woods.

AMERICAN RICHWOOD PRODUCTS CO.
Graining Plate Division
104 E. Mason St., Milwaukee 2, Wis.

ance of the new setup they have placed in operation—completely conveyorized automatic spray coating and oven drying which occupies comparatively small space in the factory. One worker loads the work holders and another takes off the finished parts. It's an excellent setup for the demands of high class uniform quality finishing on a mass production basis.

The firm had made inquiries and obtained estimates on the cost and production capacity of this equipment two years ago. Instead of decision and action, there followed a long period of indecision and inaction—and this is a large successful manufacturer whose name and products are household words throughout this country and abroad.

Early this year the firm contracted to manufacture several small products for military use. Then someone in the organization revived the management's interest in the automatic coating equipment. Decision and action followed quickly—and now everyone is happy about the results being achieved.

Check the Accuracy of Gauges You Use

How about checking the accuracy of the thermometers, recorders and pressure gauges all over the plant. These precision instruments are tested for accuracy before they leave the manufacturer's plant. It is safe to assume they will be correct for at least awhile after they are put in use. But like nearly everything else around any industrial plant, they take a beating. They also get dirty.

If you want a temperature of 300° F. in an oven and 50-lbs. air pressure on a spray line, it is both an advantage and a satisfaction to know that the temperature recorder and the air gauge are accurate.

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ONE NAME STANDS OUT
NEW PERIOD
Quality materials plus precision manufacture are your assurance of wood finishes at their best. You get all this in New Period Production Finishes.
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Try a 5 Gallon Working Sample at Drum Price
MANUFACTURERS OF FINE WOOD AND METAL PRODUCTION FINISHES
NEW PERIOD Production Finishes
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109 IMLAY STREET BROOKLYN, N. Y.

Salesmen . . . . During Defense Production

As defense work increases in manufacturing plants, "what to do with salesmen?" is a question that comes up in some establishments. Most firms have had experience during the war, and many of them, during that all-out rush, stood helplessly by while their sales force deteriorated into follow-up or contact men on government orders.

Now industry is about to be faced with nearly similar conditions. Previous experience should prove helpful. Many salesmen have aptitudes for work other than selling merchandise. Some have analytical minds that should work out well in consumer research . . . . for there will be a post defense work period. Some may have a talent for production; others for expediting purchased raw materials; those who have a flair for diplomacy may well be used as contact men.

In all of this scramble let us not forget to allocate a sufficient force to sell civilian consumer goods. *To depend upon scarcity of goods to sell the product is just as false as failure to advertise the product simply because defense work is taking a large share of the production.* Some of these days defense work will decrease until it is negligible, and it will finally disappear. It did before and it will again.

So that the sales organization will not completely deteriorate in the interim, it might be well to hold weekly meetings to discuss things pertaining to sales, post defense work plans, analyze consumer research reports, and to continue reminding the sales force that the day will again come when competition is the rule rather than the exception.

Finco

COMBINATION STAIN - FILLER

New—Different—Unusual

This new combination stain-filler cuts finishing time 33 1/3%. Wipes easy—can't turn gray—won't fade, won't shrink. Investigate today!

FINISHING PRODUCTS CO.
3725 East 13th Street
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Mfrs. of stains—fillers—sealers—lacquers since 1920

RESTORE PAINT IN 2 MINUTES

PER GALLON WITH
MIRACLE BLUE - BOY
5 GALLON
PAINT REJUVENATOR
Paints, lacquers and enamel products can be restored to their original consistency without opening the can. Units available to handle from ¼ pint to 50 gallon drums. Immediate delivery.
Originators of paint rejuvenating equipment---sixteen years—thousands of satisfied users.
Write for folder & prices
MIRACLE PAINT REJUVENATOR CO.
128 E. 10th Street St. Paul 1, Minn.

Quality Still Sells Finishing Materials

★ Some people have rather confused notions as to just what sells a product in industry. There are a number of factors. I would say that quality—in its price class—is the primary factor in producing sales. Service also produces sales; so does the reliability of the seller and the uniformity of the product. *Advertising is another factor that certainly helps sales.*

What about connections? Knowing the right people helps, especially if other factors are equal, but this business of connections can easily be overrated. It is expecting a great deal to have someone make an unwise purchase for friendship's sake. The buyer is then cheating his employer.

What about salesmanship? The salesman has definite functions in industry and is valued by employer and customer alike. A good salesman will make considerably more sales than a poor one. Even the best salesman, however, cannot be a miracle man. Purchasing agents generally know a little about salesmanship themselves and are familiar with the "tricks of the trade." I have never met a salesman with ability so remarkable, with personality so compelling, that he could weave a spell around the average purchasing agent and sell him an inferior product. If I did find such a man I certainly wouldn't let him near me.

What about shortages? When a company cannot keep up with the

★ *Guest Editorial . . . Many readers can write an excellent editorial—two or three paragraphs that present a timely suggestion or valuable idea which will stimulate thought on a live subject. The Editor welcomes guest editorials and pays for those used.*

demand for its product there is no problem of trying to sell it. Shortages do not last indefinitely, however, and competition eventually returns. The company that has retained the quality of its products and the goodwill of its customers will be in a good position to face that competition.—*E. V. G.*

D. Weaver is Indiana Man for Cowles Chemical Co.

Cowles Chemical Co. announces the appointment of Don E. Weaver as Cowles Technical Man in its Metal Cleaner Department for the Indiana - Southern Ohio territory. This appointment is part of Cowles' expansion program to cover more completely the metal cleaning market.

Mr. Weaver is well qualified to give valuable assistance to members of the metal working industry. He attended Ohio State University and the University of Cincinnati before entering production work and enamel and pickle control work for a stove manufacturer in Ohio. Just previous to coming with Cowles, Don was employed by a large stove manufacturer in the state of New York in a supervisory capacity for metal cleaning preparatory to porcelain enameling.

REPRINTS AVAILABLE

Paul Blackmore's
12-page article entitled

"HOW MUCH IS A GALLON OF PAINT WORTH"

as published in the August, 1950, issue of this magazine.

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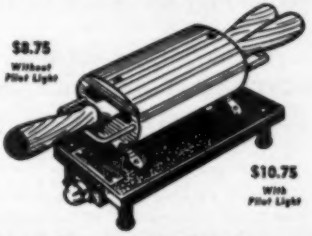
If You Use OP-AL



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Sold By All Leading Jobbers

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A Protective Hand Cream Especially Formulated

for . . . Persons handling Polishes, Paints, Varnishes, Lacquers, Stains, Inks and Adhesives.

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FREE!! FULL SIZE SAMPLE.
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COMPO CHEMICAL CO.
Incorporated
MANSFIELD, MASS.

DISTRIBUTORS WANTED: Good territories open to men calling on finishing field.

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can *rely* on
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FOR PROMPT SHIPMENT IN ANY QUANTITY OF

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GOVERNMENT SPECIFICATION
FINISHES

Lacquers • Enamels • Dopes • Thinners
Clear Metal Finishes • Colored Lacquers
Clear S.G. for Metal • Texture Enamels
Specialized Production Finishes
Aircraft Finishes

RANDOLPH PRODUCTS CO.
CARLSTADT, NEW JERSEY

Random Comment on the Industrial Scene

(Continued from page 8)

and studs for the tank are also made of the rigid plastic material. No metal is used.

In these days of shortages of stainless steel and lead, this material should fill in for many industrial requirements.—*B. F. Goodrich Co.*

* * *

Control Instruments. It is reported that sales of scientific instruments, apparatus and supplies have increased 23% in the first seven months of 1951 as compared with a corresponding period last year.

This trend is a definite indication that more practical research is being carried on, and that more people want to know what is happening in the plant. Accurate knowledge is a fine thing provided it is put to good use.

* * *

Hands and Feet. National survival depends on a nation's skill in production which is really the ability to use millions of hands and feet to the greatest advantage — needed today to reduce costs, lower prices and to ward off inflation. The economical use of hands and feet is so essential that man has developed all sorts of labor saving devices to enable him to do more work in less time. The time required to make motions with hands and feet is becoming more and more significant as we progress.—*Joseph H. Quick.*

* * *

Mahogany Paneling. Philippine mahogany paneling is now available to American home owners in the form of a convenient install-it-yourself "package."

The package contains ten panels of beautifully veneered pre-finished Phil-

Plated Effect Coatings

- NO DYES OR BRONZE POWDERS USED
- NON SETTLING — NON JELLING
- SUPERIOR ADHESION TO PRACTICALLY ALL SURFACES
- EXCELLENT LUSTRE & REFLECTIVITY.

ANOTHER NATIONAL EXCLUSIVE

NATIONAL LACQUER & PAINT CO., INC
7415 S. GREEN ST • CHICAGO 21, ILL.

SEND FOR FREE BULLETIN

ippine mahogany Plankweld, together with "invisible" steel clips for easy installation, enough for the average living room wall.

Plankweld is the first pre-finished plywood ever offered. These panels are guaranteed "for the life of your home." They are carefully rubbed, waxed and finished at the factory. Other woods are also available.

Plant Maintenance Show

Plans for the third Plant Maintenance Conference, to be held concurrently with the Plant Maintenance Show at Convention Hall, Philadelphia, Jan. 14-17, call for the most intensive examination of maintenance problems ever undertaken.

Thirty-four separate discussions will be conducted. More than 100 experts, drawn from industrial firms all over the country, will lead the panels. Ten thousand maintenance executives are expected at the show and conference.

R. C. Mahon Co., Detroit, Moves Last Two Divisions to New Plant

The Structural Steel Division and the Steel Deck Division of The R. C. Mahon Co., which were the only divisions of the company remaining at the Mt. Elliott Ave. plant, have now completed movement to the company's new, ultramodern plant at 6565 East Eight Mile Road at Sherwood Avenue, Detroit, Mich.

This move brings the entire Mahon operation, including General Offices, into one location where the eight divisions of the company will occupy a plant covering some 57 acres when the construction is completed.

PAINT STRIPING TOOL

NEW EYE APPEAL FOR YOUR PRODUCT— LITTLE OR NO LABOR COST!

Amazing new Paint Striping Tool makes it easy to do expert striping. Paints straight, curved, circular or evenly spaced parallel lines simply and easily. Simply fill Tubular Glass Paint Fountain with paint or lacquer and Knurled Wheel Tip feeds paint evenly. Tips interchangeable — 1/64", 1/32", 3/64", 1/16", 5/64", 3/32", 1/8"—jaws split apart for easy cleaning.

Use For STRIPING
- FURNITURE
- TOYS
- BICYCLES
- BOATS
- SCOREBOARDS
- LAMPSHADES
- AUTOS
- SIGNS
- CERAMICS AND ALL PAINTED OBJECTS

DEALERS—MASTER PAINT STRIPING TOOL packed in display cartons of 1 doz. Fast, profitable seller. Write for illustrated circular, discounts.

WENDELL MFG. CO.
Dept. 910, 4234 N. Lincoln
Chicago 18, Illinois

The Structural Division will occupy new facilities involving over 400,000-sq. ft. of floor space which will permit the Division to more than double its fabricating capacity.

Other Divisions of The R. C. Mahon Company include: Steel Warehouse Division; Steel-Weld Division; Industrial Equipment Division; Rolling Steel Door Division; Insulated Metal Wall Division; Steel Deck Division; and Roofing and Sheet Metal Division.

The company maintains sales-engineering offices and sales representatives throughout the country.

Chicago Internat. Trade Fair

The Chicago International Trade Fair will be held at Navy Pier from March 22 to April 6, next year. It is the second fair of its kind held in the United States. Businessmen from 44 nations exhibited their products at the Fair last year, which drew 25,000 buyers and a public attendance of 250,000.

YOUNG BROTHERS
baking and drying **OVENS**

Standard and specially designed ovens built to produce the finest results in PAINT and VARNISH BAKING • LACQUER DRYING • RUBBER CURING • METAL DECORATING and other industrial finishing processes. Batch or Continuous Types for any fuel. Write for Bulletin 3.

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1835 Columbus Road • Cleveland 13, Ohio

Estab. 1896

Iridescol
PEARL ESSENCE

A natural product. Price f.o.b. Wilmington—$6.75 per pound. 4 ounce sample jar, postpaid—$2.50. (Enough to make one gallon lacquer)

IRIDESCENT PIGMENT CORP. of AMERICA
P. O. Box 1605 Wilmington, Del.

Clean Spray Guns at End of Each Shift

One plant has wisely spent some money for economy. First the management saw to it that an instruction class was conducted for all spray operators. One of the subjects covered in detail was the care and cleaning of spray guns—something that is always vitally important.

Their products require 12 colors of enamel, all of which are pumped to the spray booths through a circulating system from a central supply room. During each working shift all of the colors are used, but some colors are used more than others, and this results in more or less intermittent spraying.

Now the conveyor line is stopped 12 minutes before a working shift ends. In the 12-minute period at the end of the shift, each operator thoroughly cleans his share of the guns in that particular booth so they will be ready to use on the next shift.

The company has found that it does not actually lose the 12 minutes of production, for the cost of these few minutes of time is offset by a reduction of rejects, no stoppage during the working shift, and the fine uniform quality of finish obtained. Then too, the intricate and vital parts of the spray guns last longer.

Classified Advertising

Rate: $1.00 per line per insertion—minimum $5.00

POSITION WANTED.

Woodfinishing supervisor, engineering background, several years' experience successful dexterity in the organic finishing field, thoroughly familiar with modern equipment, materials and methods. Seasoned in all phases of production, research, costs reduction, jobs survey and evaluation for civilian or defense case goods. Address IF-842, care Industrial Finishing.

SALESMAN WANTED.

Experienced Industrial Salesman selling vinyl, lacquer, synthetic finishes. Wonderful opportunity. Old established progressive company near Philadelphia. Territory, Eastern Pennsylvania and New Jersey. Apply in detail. Strictly confidential. Address IF-843, care Industrial Finishing.

CLASSIFIED ADVERTISING

The rate on ads appearing in this department is $1.00 per line of 6-pt. light face type, per insertion. Minimum charge, $5.00. Ads set in 8-pt. extra bold face type cost $2.00 per line, per insertion. Regular display advertising rates apply on fractional page display ads running in this department. Rate card on request.

POSITION WANTED

By finishing superintendent with extensive experience in all phases of organic finishes. Thorough knowledge of production and finishing methods. Capable of complete charge. Can handle and train any number of employees. Address IF-833, care Industrial Finishing.

WANTED.

Decorating Foreman Experienced in Lustering, Spraying and Silk Screening Glassware. Plant located in West Penna. Write a detailed account of work experience, salary required, and availability. Address IF-834, care Industrial Finishing.

WANTED.

High calibre industrial sales representative with sound technical background Central West territory. Association with progressive company of good reputation, having an excellent laboratory, a line of quality products with some unusual specialties. Should provide right man with opportunity for volume sales and corresponding compensation. State qualifications in detail. Written application only. Confidential. MIDLAND INDUSTRIAL FINISHES CO., East Water Street, Waukegan, Illinois.

HELP WANTED.

SEARS, ROEBUCK AND CO. PAINT AND VARNISH FACTORIES need experienced industrial and trade sales formulators and technical service engineers at the Central Laboratories in Chicago and at plants located in Pennsylvania, North Carolina, Tennessee, California, and Illinois. This expansion program offers excellent opportunities for capable ambitious technicians. ALL SEARS EMPLOYE BENEFIT PLANS APPLY. Please contact Mr. G. A. Nichols, Central Laboratories, care of Illinois Paint Works, 1034 S. Kostner Ave., Chicago 24, Ill.

SALESMAN WANTED.

Chicago manufacturer of industrial finishes has excellent opportunity for salesman with established business in Indiana, Illinois, and Iowa territory. Reply in confidence giving complete qualifications. THE CLINTON CO., 1210 Elston Ave., Chicago 22, Ill.

PAINT EXPERT WANTED.

An expert capable of handling all phases of finishes on Ferrous Metal Furnitures for a factory in India on contract basis. Write with full details of experience and terms expected. Address IF-835, care Industrial Finishing.

SALESMAN WANTED

To represent fast growing Chicago Industrial Paint Manufacturer to sell production finishes in Northern Indiana, Illinois and Metropolitan Chicago. Replies held confidential. Address IF-829, care Industrial Finishing.

WANTED.

Top Grade Wood Lacquer and Stain Chemist, by medium sized midwest manufacturer. We have pension plan, good working conditions and a fine reputation. Will pay top salary to the right man who can expand and improve our wood finishes line. Address IF-836, care Industrial Finishing.

CHEMISTS WANTED.

Excellent opportunity is extended to two B. S. Chemists or Chemical Engineers, one experienced in the formulation of industrial enamels and the other sufficiently experienced and qualified in the formulation of nitrocellulose lacquers to be a group leader. Please send a resume of formulation experience, academic training and personal facts. Lower midwest location. All replies to be held strictly confidential. Address IF-837, care Industrial Finishing.

UNUSUAL OPPORTUNITY . . .

. . . for an aggressive, ambitious young man with wood finishing experience. To be given extensive training in color styling, lacquer, stain and filler formulation. Must have good "Color Eye". Salary open, commensurate with experience and ability. Midwest location. Write detailed account of experience and education. Enclose recent snapshot. Address IF-840, care Industrial Finishing.

How to improve

METAL PRODUCTS

through better finishes

Here is a book that answers all the questions on finishing metal products and shows the methods, techniques, and cost factors in producing them.

Just Published

FINISHING METAL PRODUCTS

New Second Edition describes all recent developments in this field.

By HERBERT R. SIMONDS and ADOLPH BRECMAN, Consulting Engineers. 352 *pages*, 5x8, 135 *illustrations*, $4.00.

A COMPLETE PRACTICAL MANUAL covering usual types of finishing—galvanizing, polishing, plating, lacquering, painting. Also discusses fully such subjects as use of color and production and use of prefinished materials.

COVERS FINISHING from a business and sales standpoint. Deals with methods that improve results and reduce costs. Helps you determine types of finish with greatest sales appeal.

EXPLAINS SHOP TECHNIQUES. Tells how to reduce polishing and buffing costs. Gives techniques for cadmium plating, chromium plating, spray coating. Tells how to use enamels and lacquers in metal parts production.

This up-to-date, handy manual should be at the finger-tips of plant managers, superintendents and foremen. Send your remittance today to

INDUSTRIAL FINISHING

1142 N. Meridian St. Indianapolis 4, Ind.

WANTED.

B. S. Chemist or Chemical Engineer experienced in formulation of organic protective coatings for development of Industrial finishes. Excellent opportunity for advancement. In reply give detailed personal data, educational background and formulation experience. Write or phone: George Neumann, Jones-Dabney Co., 1481 S. 11th St., Louisville 8, Ky. Phone Magnolia 6900.

PAINT SALESMEN—NEW ENGLAND.

Aggressive, experienced salesmen needed to sell synthetic enamels and lacquers for product finishing. Good opportunity, fine company benefits, salary and bonus consistent with experience. Please state age, experience and availability for interview. All replies confidential. Address IF-841, care Industrial Finishing.

WANTED TO BUY.

Will buy your dirty Thinners and Solvents. Send samples or letter giving approximate contents and solids Address THE JOHANN CO., Room 416, 180 E. 63rd St., Chicago, Ill.

SOLVENT CLEANING SERVICE.

Dirty lacquer solvent can be shipped to us for distillation and returned to you clean and ready for use. Within 200 mile radius of Louisville a substantial economy can be realized. Cost runs from 14c to 19c per gallon. KENTUCKY COLOR & CHEMICAL CO., 600 N. 34th St., Louisville 12, Ky.

FOR SALE.

One DeVilbiss type J. J. Fan, 33-in. blade, with "Master" motor, 3-phase, 220-volt, 2-HP, and mounting bracket—reconditioned. Also one same type less motor. Address IF-838, care Industrial Finishing.

FOR SALE.

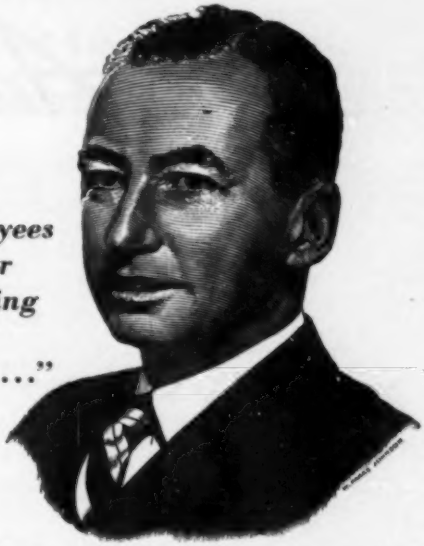
One Paasche Automatic Spraying equipment, with two water-wash booths, each with 15-ft. conveyors, rotating spindles and removable fixtures. Equipped with explosion-proof motors throughout. Has dual mixing tanks and airbrushes. Used very little. Like new. Very reasonable. Address IF-839, care Industrial Finishing.

FORD CUPS

THE VOL-U-METER COMPANY

Buffalo 16, New York

"Some 15,000 employees in all branches of our organization are taking advantage of the Payroll Savings Plan..."



SPENCER LOVE
Chairman of the Board
Burlington Mills

"The Payroll Savings Plan is one of the important personnel services offered to the employees of our company. At the present time some 15,000 employees in all branches of our organization are taking advantage of this splendid plan for systematic savings. In times of national emergency this plan assists in stabilizing the economic life of the employee, the community and the nation."

Last call for the 1951 Defense Bond Campaign!

While the campaign was scheduled for six weeks, beginning Labor Day, the *accounting period* will include all Payroll Savings Plan bond purchases and enrollments in September *and October*.

If *you* haven't conducted a person-to-person canvass to put a Payroll Savings Blank in the hands of every man and woman in *your* company there is still time to join the thousands of companies which have added nearly a million employees to the Payroll Savings Plan through person-to-person canvasses.

Phone, wire or write to Savings Bond Division, U. S. Treasury Department, Suite 700, Washington Building, Washington, D. C. Your State Director will give you all the help you need—application blanks, posters, envelope stuffers, personal assistance.

Give your employees an opportunity to save for their future and at the same time, help to maintain America's economic security—put an application blank in their hands.

The U. S. Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

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Jet blades cleaned and rust protected in one spray washer

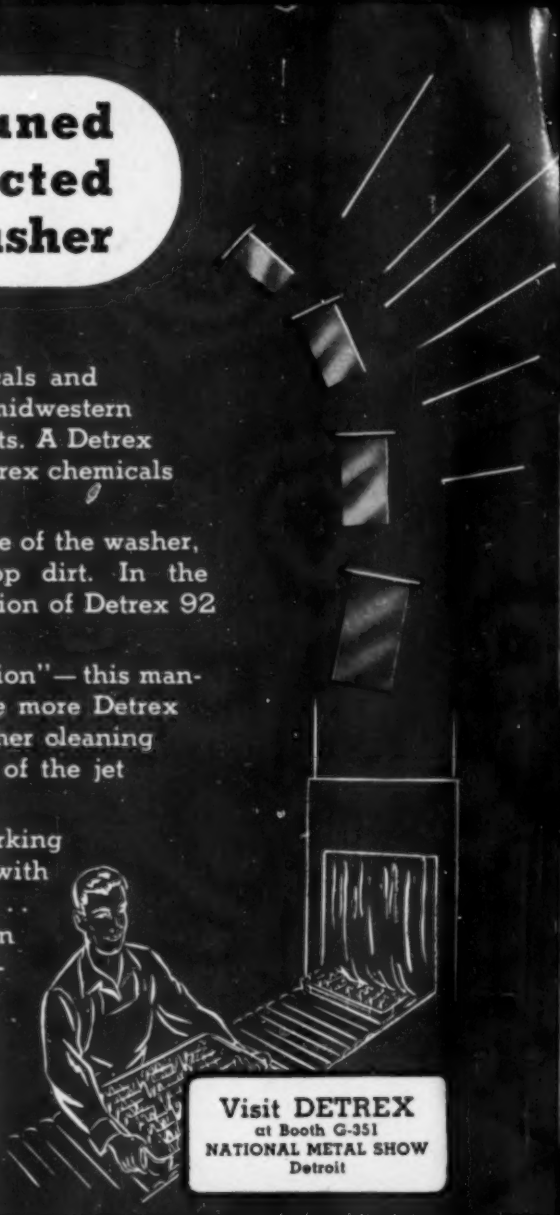
Teamwork between chemicals and equipment is paying off for a midwestern manufacturer of jet engine parts. A Detrex washer is teamed with two Detrex chemicals for a 2-in-1 operation.

Detrex 53, in the first stage of the washer, removes oil, grease and shop dirt. In the second stage, a low concentration of Detrex 92 retards rust.

Proof of "customer satisfaction"— this manufacturer is now installing five more Detrex washers and degreasers for other cleaning operations in the manufacture of the jet blades.

You, too, can benefit by working with a company that is familiar with every phase of metal cleaning . . . a company long experienced in the manufacture of both cleaning compounds and equipment.

Metal cleaning know-how thru a Detrex field engineer is yours free for the asking.



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